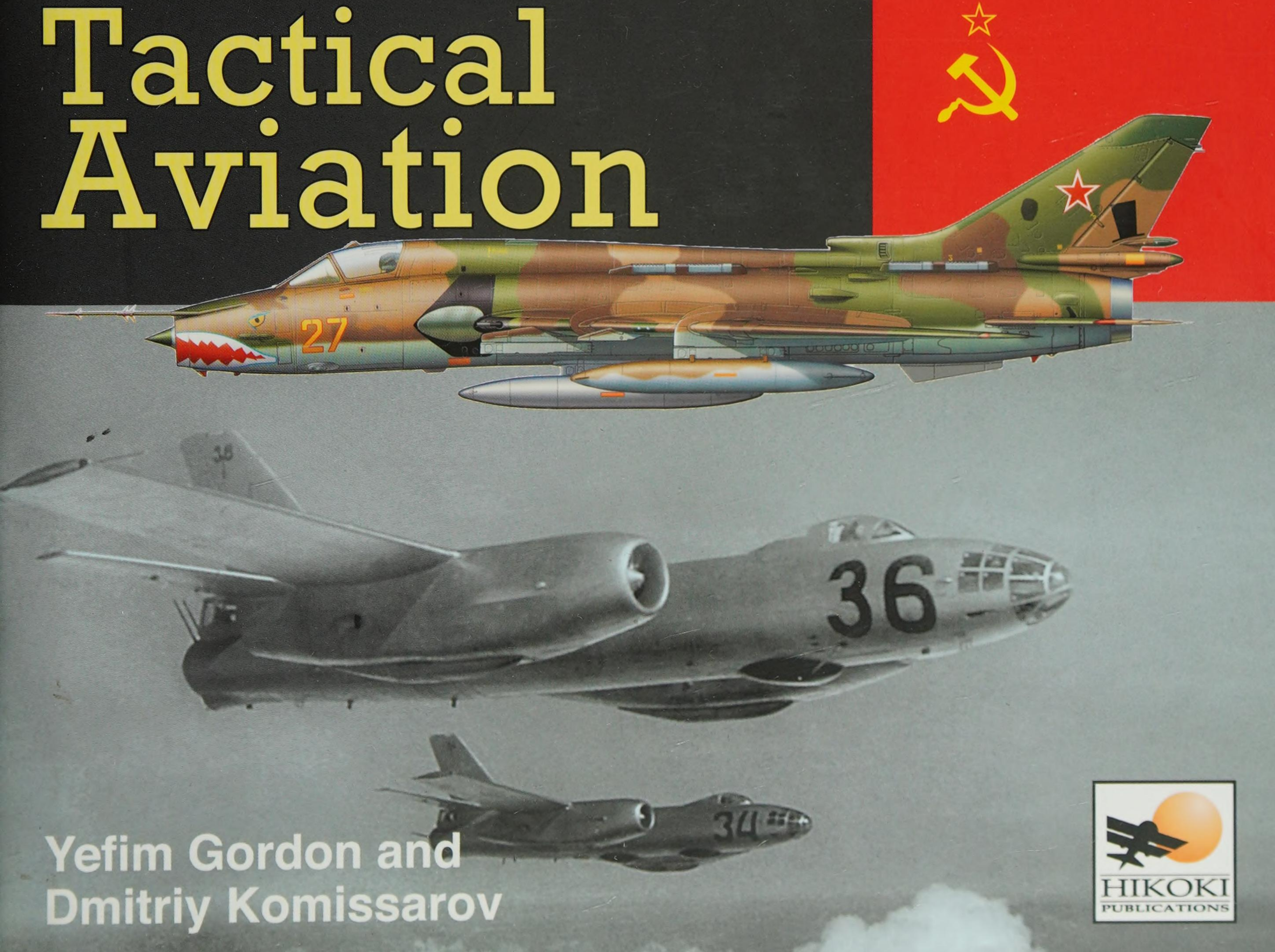
Soviet Tactical Aviation



Yefim Gordon and
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It was the post-WWII years and the height of the Cold War that saw the rapid development of jet aircraft in the Soviet Union with Soviet tactical aviation units taking delivery of progressively more refined designs such as the subsonic Yakovlev Yak-23 and Mikoyan/Gurevich MiG-15 fighters and the Il'yushin IL-28 tactical bomber. The supersonic MiG-19 fighter, Sukhoi Su-7B fighter-bomber and Yakovlev Yak-28 tactical bomber followed with the backbone of the PVO Fighter Aviation fleet being made up of iconic radar-equipped all-weather interceptors including the MiG-17P/PF and the supersonic MiG-19P/PM, Su-11 and Tupolev Tu-128.

By contrast, the attack aviation units had to make do with outdated IL-10 and IL-10M piston-engined aircraft well into the 1950s until they were superseded by MiG-15*bis* and MiG-17 fighters which were converted into fighter-bombers after being phased out by first-line fighter units.

By the 1980s and early 1990s the Soviet Union's responsibilities under arms reduction treaties, coupled with mounting economic difficulties, led to a new decline of the Soviet (and later Russian) Tactical Aviation. This book uncovers the real story behind the 'glory days' of Soviet tactical aviation, both in its homeland and in many countries overseas, including Afghanistan, Cuba and the Middle East.

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Opposite: A pair of Su-25s await the next sortie.

The flight line of a Soviet fighter unit in Germany operating a mix of MiG-29s and MiG-23UBs.

Introduction

The term 'tactical aviation' is generally used to denote the branch of a nation's air force that is intended for operating – whether on its own or in conjunction with ground forces or naval forces – on a limited theatre of operations. In the past (the 1950s/1980s) the tactical aviation was normally equipped with tactical (air superiority) fighters, fighter-bombers, tactical reconnaissance aircraft, ground attack aircraft and various utility aircraft and helicopters. Today, however, most of the above roles can be performed by 'one-size-fits-all' multi-role combat aircraft of the latest generation; this obviates the need to operate a large number of assorted types, eliminating a host of logistical and technical problems associated with everyday operation.

In the Soviet Union a slightly different terminology was used in the years after the Second World War. The tactical aviation arm of the Soviet Air Force (VVS – *Vo**yen**no-voz-**doosh**nyy **see**ly*) was called *Fronto**va**ya avi**ah**tsiya* (FA), literally 'Frontal Aviation' – both because it operated over the frontlines and because in wartime it was placed under the command of the fronts (the largest troop formations operating at a given theatre of operations). Hereinafter, however, the FA will still be called Tactical Aviation, as it was roughly equivalent to the US Air Force's Tactical Air Command (TAC). In similar manner, the VVS included the DA strategic bomber arm (***Dahl'**nyaya avi**ah**tsiya* – Long-Range Aviation) equivalent to the USAF's Strategic Air Command (SAC) and the VTA (*Vo**yen**no-**trahns**portnaya avi**ah**tsiya* – Military Transport Aviation) equivalent to the Military Airlift Command (MAC) or the later Air Mobility Command (AMC).

Additionally, certain tactical aviation functions were performed by the Army Aviation. This was alternately placed under the control of the Air Force or the Soviet Army proper.

The Soviet Tactical Aviation pilots gained their first post-World War Two experience of actual combat soon enough when the Korean War broke out in 1950. Fighting alongside the Joint Chinese/North Korean Air Army, they

Tactical Aviation pilots on the flight line of a fighter-bomber unit equipped with Su-7BMs.

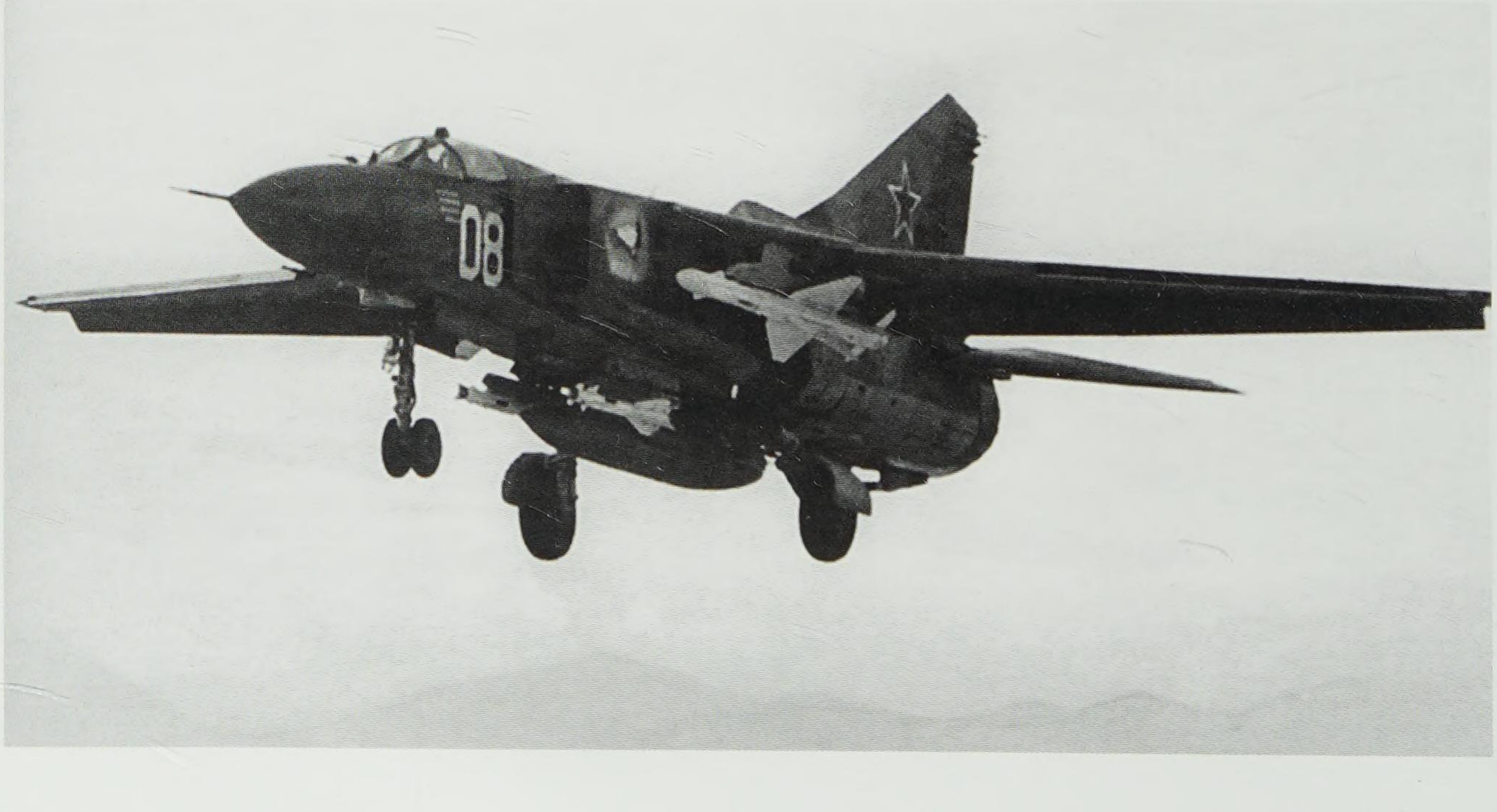
fought bitter battles against the US-led United Nations coalition forces, sustaining heavy losses but inflicting heavy losses on the enemy as well. They also had a hand in other local wars in the 1960s, 1970s and 1980s when the Soviet Union extended military assistance to nations within its sphere of influence. FA pilots and ground crews had almost a 'have gun, will travel' life style – and travel they did, together with their aircraft, to such places as Cuba and the Middle East.

In due course the daily routine of the Tactical Aviation became more peaceful as the armed conflicts drew to a close. The FA's numerical strength and order of battle changed over the years. While the early 1950s were characterised by a growth of the Tactical Aviation's combat potential thanks to the introduction of new transonic (and later supersonic) combat aircraft, the end of the decade brought massive reductions in manned combat aircraft at the whim of the Soviet leader Nikita S. Khrushchov. When the latter was unseated in October 1964 and replaced by Leonid I. Brezhnev, who did not share his predecessor's bias towards ballistic missile systems, the FA's development gained a new impetus; the Tactical Aviation rebuilt its strength and re-equipped with third-generation combat aircraft. In the 1980s and early 1990s the Soviet Union's responsibilities under arms reduction treaties, coupled with mounting economic difficulties, led to a new decline of the Soviet (and later Russian) Tactical Aviation.

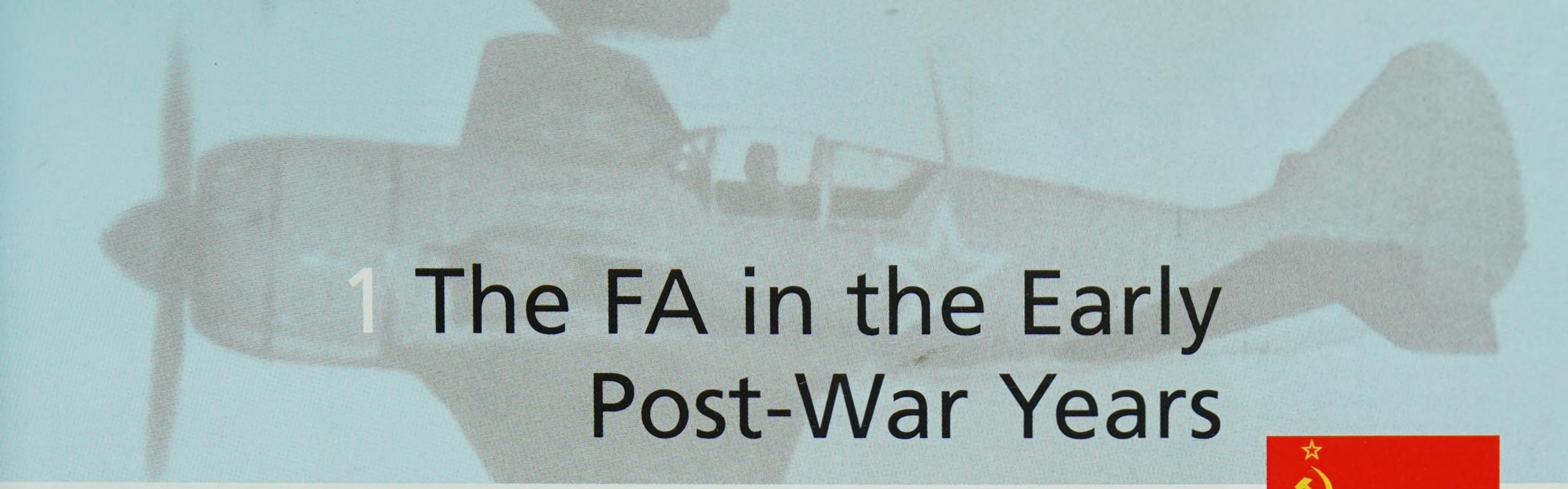
The 1950s and the 1970s can justifiably be regarded as the golden age of the Soviet Tactical Aviation. The development and service entry of supersonic aircraft armed with cannons, missiles and bombs and equipped with powerful radars allowed the FA to operate in any weather conditions and round the clock, intercepting high-speed aerial targets at long range, providing close air support for own troops on the battlefield, detecting and destroying small mobile targets, attacking enemy air and ground assets and conducting aerial reconnaissance. Soviet Tactical Aviation units were permanently stationed in Eastern Europe, being at the forefront of the Cold War between the Warsaw Pact and the NATO alliance. FA units were deployed there on a rotational basis, which allowed the maximum number of aircrews to gain valuable experience.

Another 'hot spot' where the combat skill and experience of FA crews were built up was Afghanistan. In the extreme conditions of the Afghan War which claimed the lives of many Soviet pilots, the airmen and ground crews served gallantly as they were supposed to – even if the pointless war brought nothing but damage to the Soviet Union in the long run.

The ups and downs of the Soviet Tactical Aviation in the post-war period are the subject of this book.



Loaded with two R-24 medium-range AAMs and two R-60 short-range AAMs, MiG-23MLD '08 White' of the 120th Fighter Regiment comes in to land.



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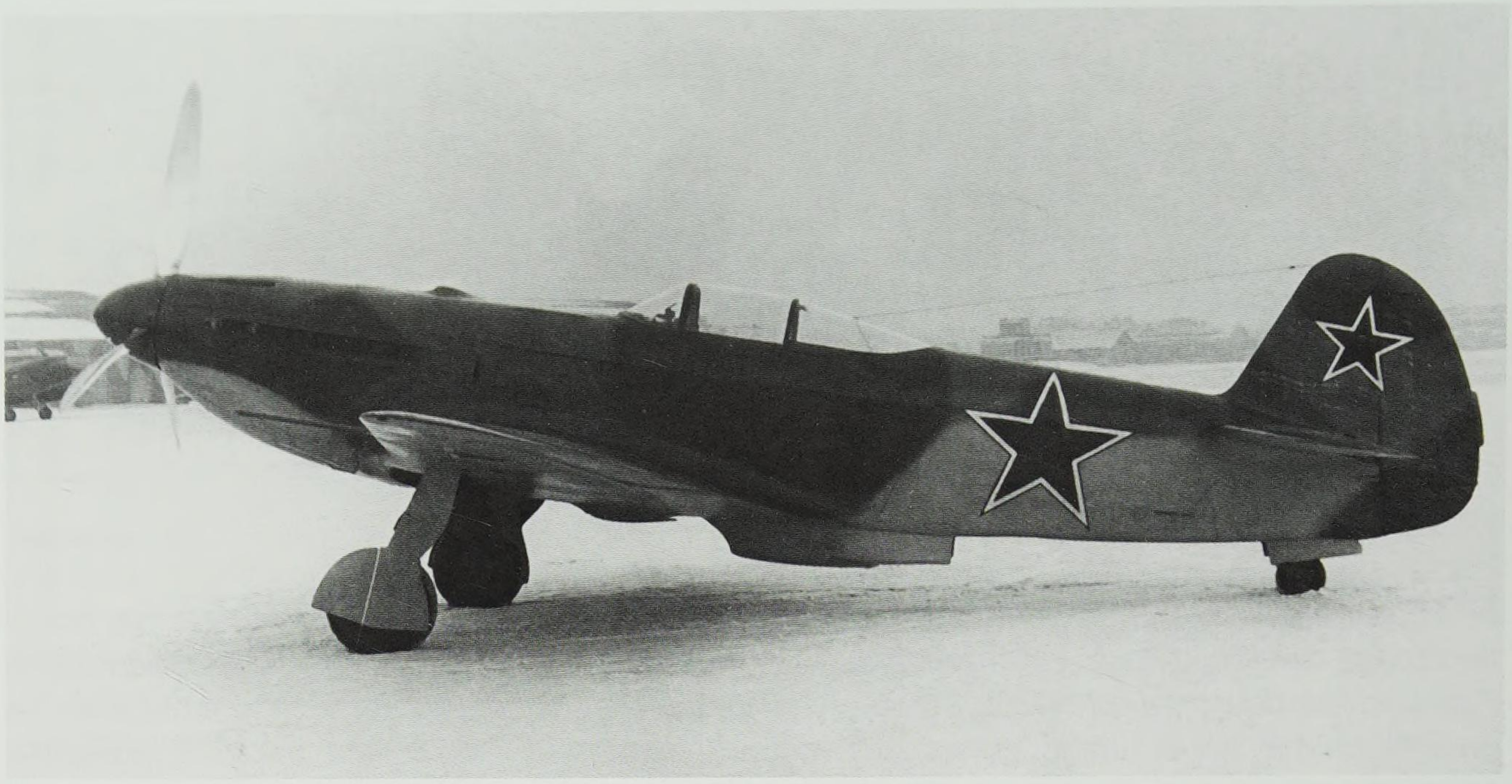
The FA in the Early Post-War Years

For the Soviet Union, victory in the Second World War (alongside its allies in the anti-Hitler coalition) was made possible to no small degree by the bolstering of the Soviet Air Force during the four years of the Great Patriotic War (22nd June 1941 to 9th May 1945) and the growth of the Soviet aircraft industry. The Soviet pilots were battle-hardened, and some even had a chance to take on the latest German jet fighters. The commanders of the Air Force units and formations were well versed in combat tactics, which they passed on to future commanders at military colleges and the Air Force Academy. The Soviet Air Force structure, too, changed in the post-war years, benefiting from wartime experience; new field manuals were written and introduced, the order of battle was steadily refined, and so were the air combat tactics.

In the immediate post-war years the transition from propeller-driven aircraft to jets was one of the main priorities in the Soviet Air Force's development. The Tactical Aviation (FA – *Fronto**va**ya avi**ah**tsiya*), whose roles were securing air superiority, close air support of 'friendly' troops and destruction of enemy assets on the battlefield and immediately beyond the frontlines (in the theatre-tactical area), received first-generation jet fighters – the Mikoyan/Gurevich MiG-9 *Fargo*, Yakovlev Yak-15 *Feather*, Yak-17 *Feather*, Yak-23 *Flora*, MiG-15 *Fagot*, Lavochkin La-15 *Fantail* – and first-generation jet tactical bombers (the Il'yushin IL-28 *Beagle* and Tupolev Tu-14 *Bosun*). Yet, many wartime and immediate post-war piston-engined aircraft – the Yak-9P/Yak-9U *Frank*, La-9 *Fritz* and La-11 *Fang* fighters, the IL-10 *Beast* attack aircraft and the Tu-2 *Bat* short-range bomber – served on until the end of the 1940s. The rewinged IL-10M was probably the last of the kind, remaining in Soviet Air Force service until the mid-1950s.

The latter type warrants describing in a bit more detail. After the end of hostilities all remaining attack air regiments of the Soviet Air Force re-equipped with the all-metal IL-10. However, this took some time, and the



This view illustrates the elegant lines of the late-model Yak-9 VK-107A. Note the aft position of the carburettor air intake on this aircraft.

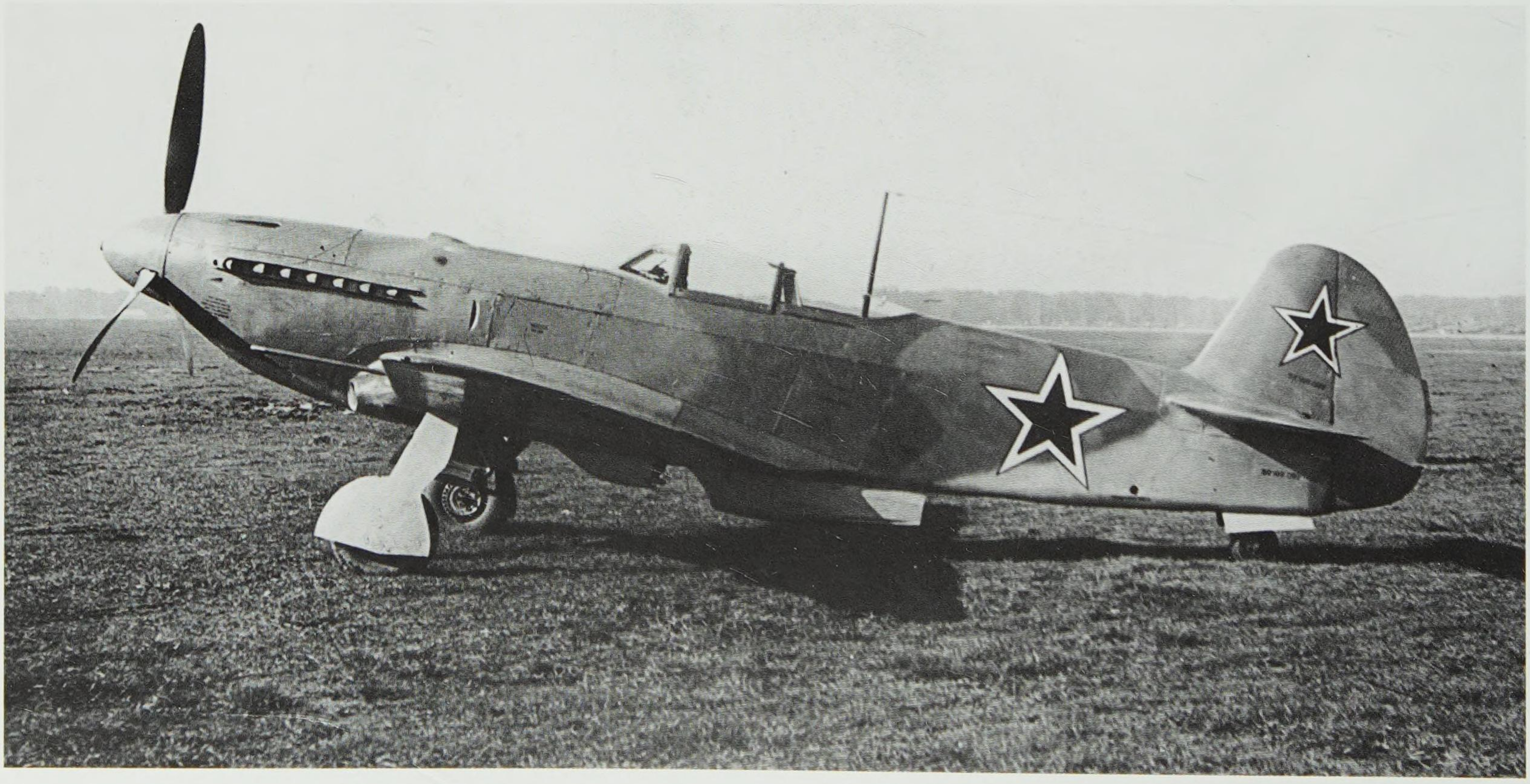
Previous page: The La-11 was Lavochkin's last piston-engined fighter operated by the Soviet Air Force.

Yak-9 VK-107A c/n 52166082 was the *etalon* (pattern aircraft) for 1946 production and actually the prototype of the post-war all-metal Yak-9P. Note the larger oil cooler air outlet immediately ahead of the radiator bath and the addition of an aerial mast.

surviving examples of the famous IL-2 *Bark* attack aircraft soldiered on alongside their junior stablemates until phased out. On 22nd March 1946 the Soviet Council of Ministers issued a resolution which called for a complete conversion of four Air Force divisions and one Naval Aviation division to the IL-10.

By the early 1950s the IL-10 became the main Soviet attack aircraft type. Units operating the IL-10 were deployed in the European part of the USSR, in Eastern Siberia (east of Lake Baikal) and in the Soviet Far East. Furthermore, a number of IL-10s were operated by the Soviet occupation forces in Germany and stationed at air bases in what would soon become East Germany (the German Democratic Republic). As late as 1st January 1955, the Soviet Air Force had 1,700 IL-10s *sans suffixe* and IL-10Ms in service with 19 attack air regiments (which, true enough, were already being supplemented by MiG-15*bis Fagot-B* jet fighter-bombers).

The career of the IL-10 in the Soviet Union ended in 1956, when the Soviet Ministry of Defence decided that attack aircraft no longer were of any real value in modern warfare; their tasks, it was presumed, could be performed by fighter and bomber units. On 20th April the then Minister of Defence Marshal Gheorgiy K. Zhukov issued a directive abolishing attack aviation as an element of the Soviet Air Force. The IL-10/IL-10M aircraft were phased out and the flying personnel of the former attack air units was transferred to Air Force and Air



A typical publicity shot of 'Ye Brave Soviet Airman' standing on the wing of his fighter, scanning the skies for any signs of hostile aircraft attacking his homeland. This view gives a good close-up of the badge on the cowling – a stylised aircraft incorporating the designation (La-9 in Cyrillic) and the words 'Zavod 21' (Plant 21).

Defence Force (PVO – ***Pro***_tivovoz_***doosh***_naya_ _obo_***ron***_a_) fighter units, partly converting to the MiG-15*bis*.

Combat aircraft production in the Soviet Union in the early post-war years is illustrated by the table below.

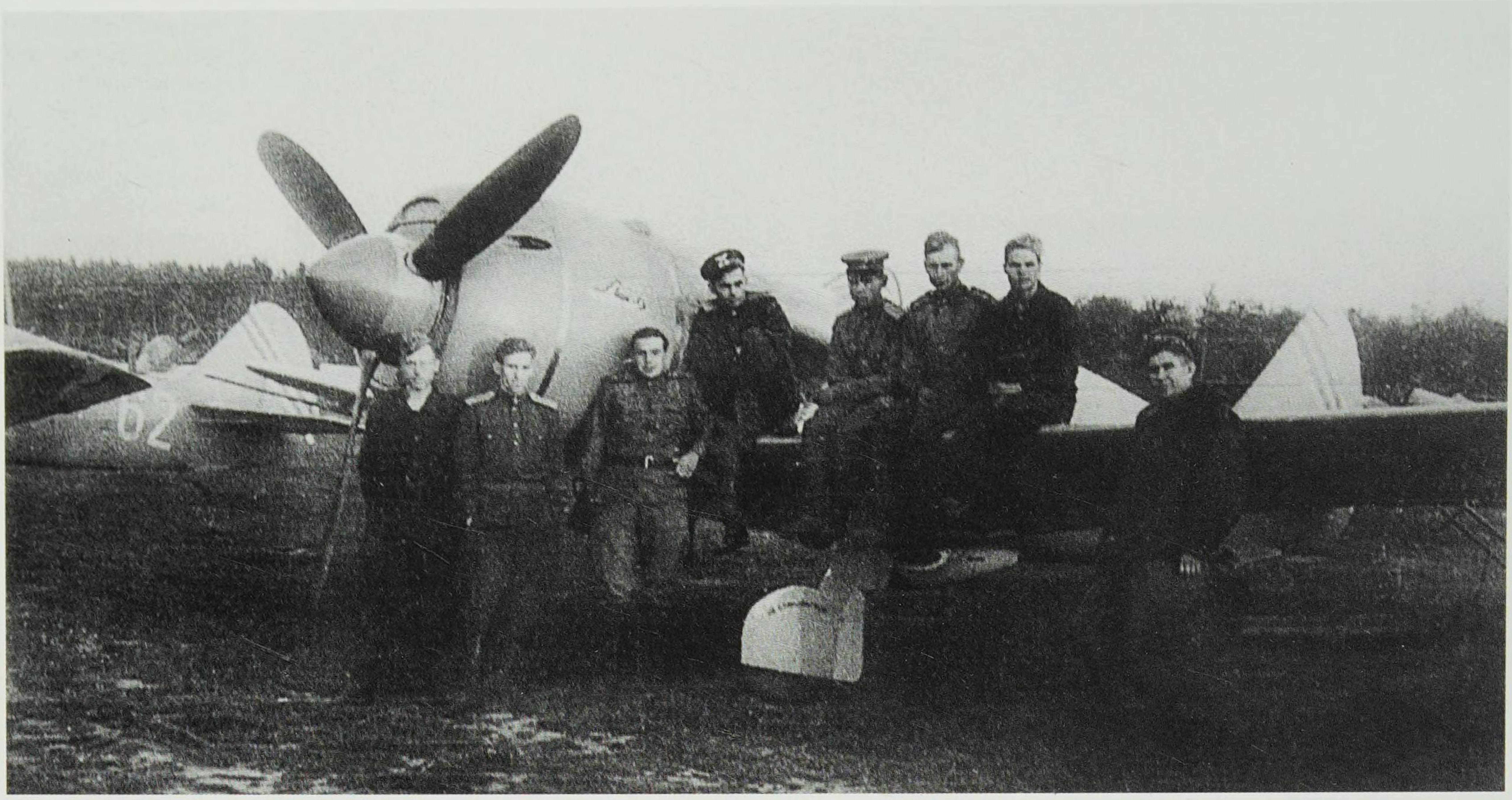
Service introduction of the early jets was accompanied by huge difficulties – due first and foremost to the lack (or, at best, scarcity) of dual-control conversion trainers. The young jet pilots had to make do with Yak-11 *Moose* (and later Yak-18 *Max*) piston-engined primary trainers, which of course could not match the performance of the jets. The Yak-15 was a notable exception, since it was a straightforward adaptation of the Yak-3's airframe to take an RD-10 (Junkers Jumo 004) turbojet instead of the Klimov VK-105 Vee-12 piston engine; even the tailwheel landing gear was retained. Though admittedly a 'quick fix', this approach facilitated pilot transition a lot.

The Yak-9U, Yak-9P, La-9 and La-11, which were pretty fast for a propeller-driven fighter, could match the speed of the jet-powered Yak-15 and MiG-9; moreover, in a mock dogfight against the jets they frequently emerged as the winners). Interestingly, the fighters developed by Aleksandr S. Yakovlev's OKB-115 (***op***_ytno-kon_***strook***_torskoye byu_***ro*** – experimental design bureau) were mostly air superiority fighters, whereas Semyon A. Lavochkin's OKB-301 specialised in escort fighters.

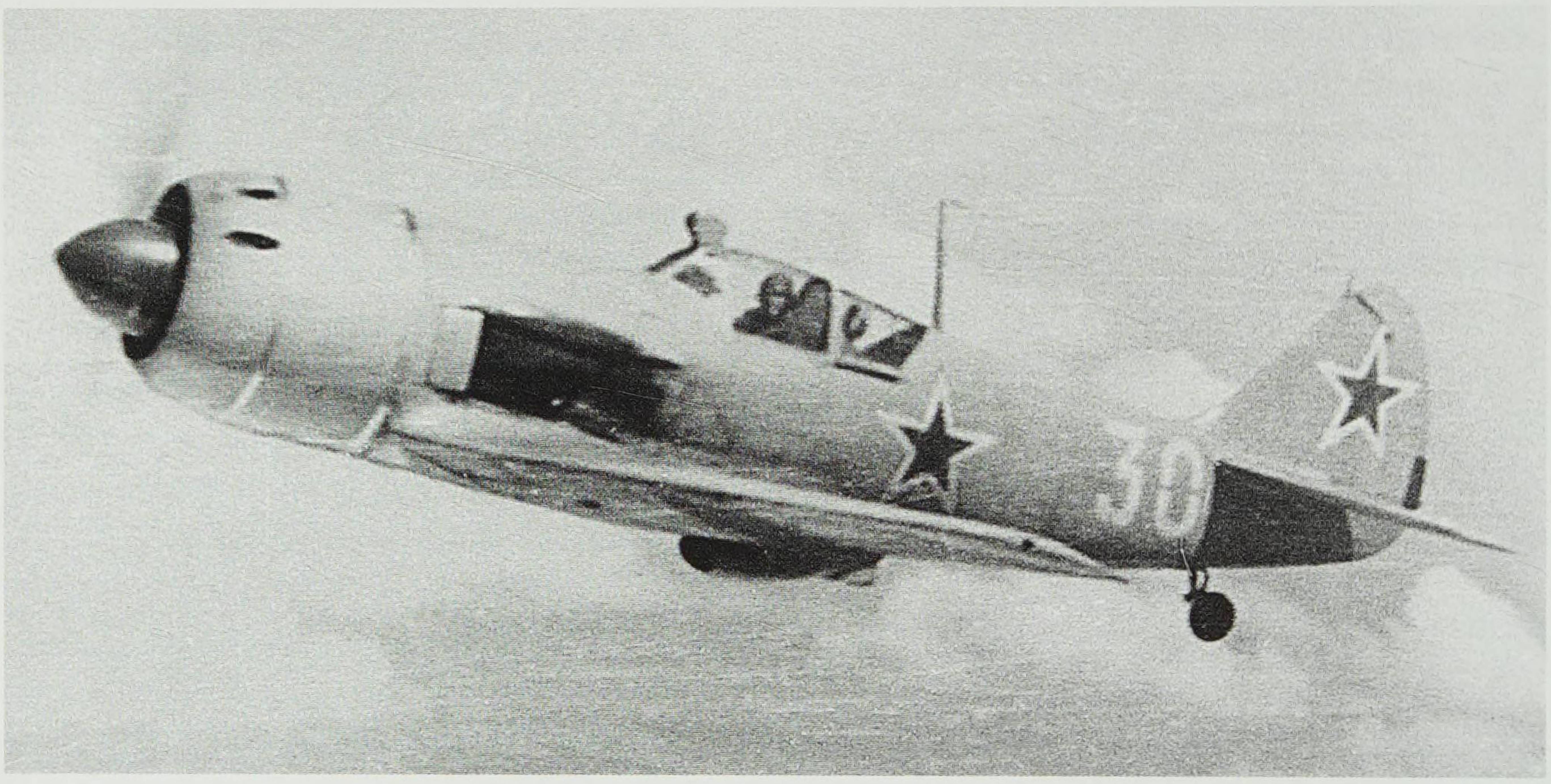
Combat aircraft production in the Soviet Union in 1946-52

Type	1946	1947	1948	1949	1950	1951	1952	Total
IL-10	1,008	871	155	178	367	994	726	4,299
I-250*	8	–	–	–	–	–	–	8
MiG-9	10	292	302	–	–	–	–	604
Tu-2	191	376	419	273	4	19	6	1,288
La-7	53	–	–	–	–	–	–	53
La-9	15	858	806	203	–	–	–	1,882
La-11	–	100	650	150	100	182	–	1,182
La-15	–	–	–	235	–	–	–	235
Yak-3	288	–	–	–	–	–	–	288
Yak-9	72	522	249	–	–	–	–	843
Yak-15	19	261	–	–	–	–	–	280
Yak-17	–	–	279	151	–	–	–	430
Yak-23	–	–	–	59	212	42	–	313

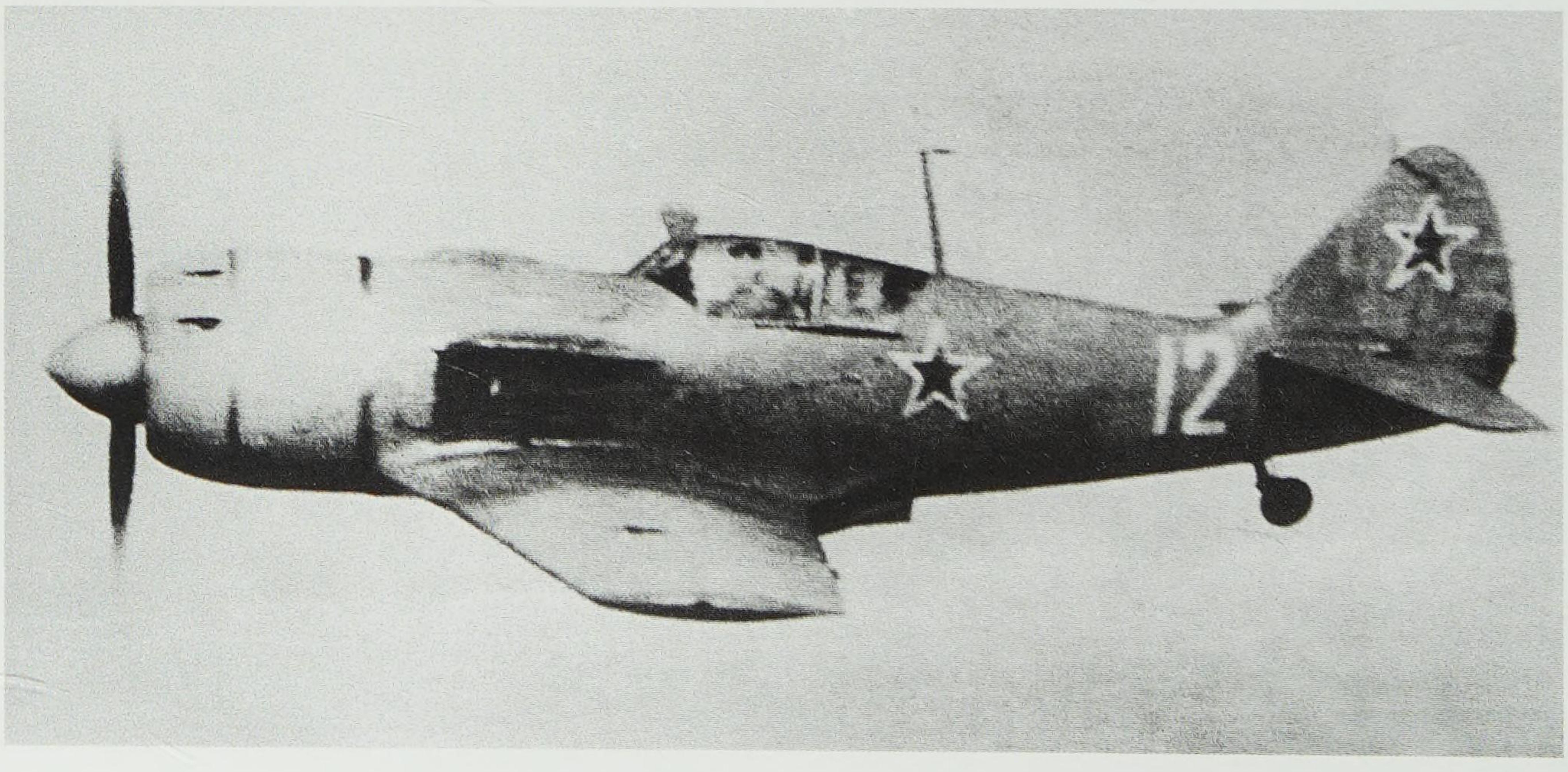
* The Mikoyan/Gurevich I-250 (aka *izdeliye*, or product, N) was an experimental mixed-power fighter with a Vee-12 engine driving both a tractor propeller and the compressor of a quasi-jet booster.



Soviet Air Force pilots pose with a Gor'kiy-built La-9. The stripes on the tail and the partially red-coloured spinner are unit markings.

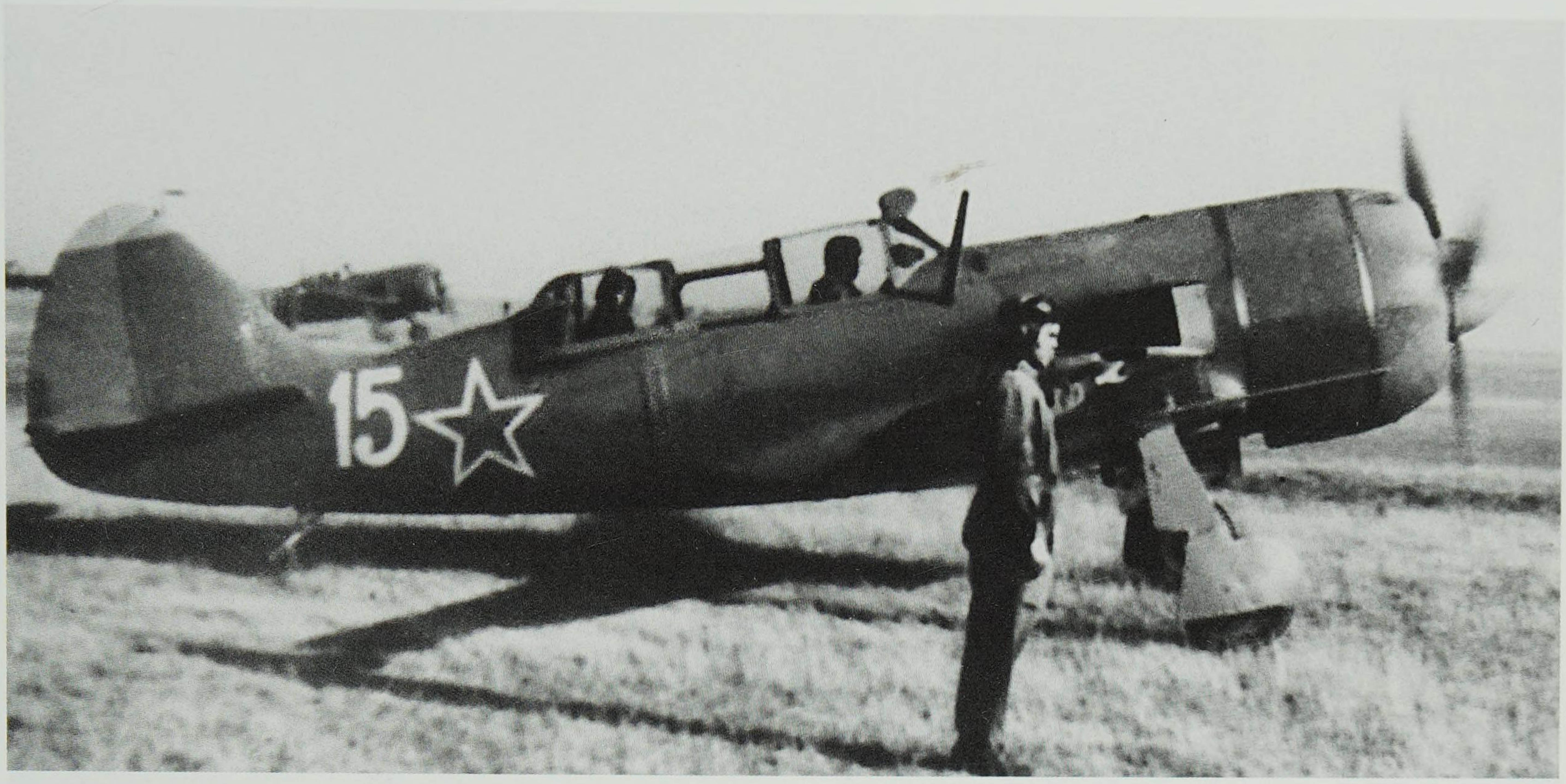


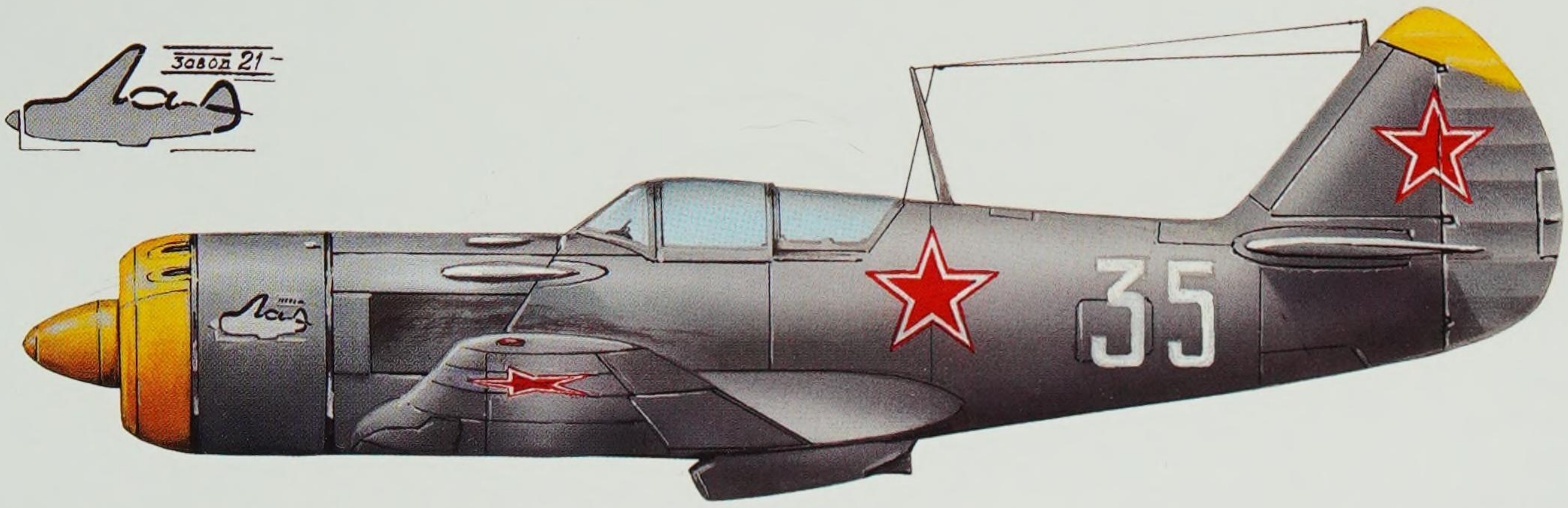
This La-9 coded '30 White' is fitted with an S-13 gun camera in a fairing on top of the cockpit windshield.



Another operational La-9 equipped with an S-13 gun camera.

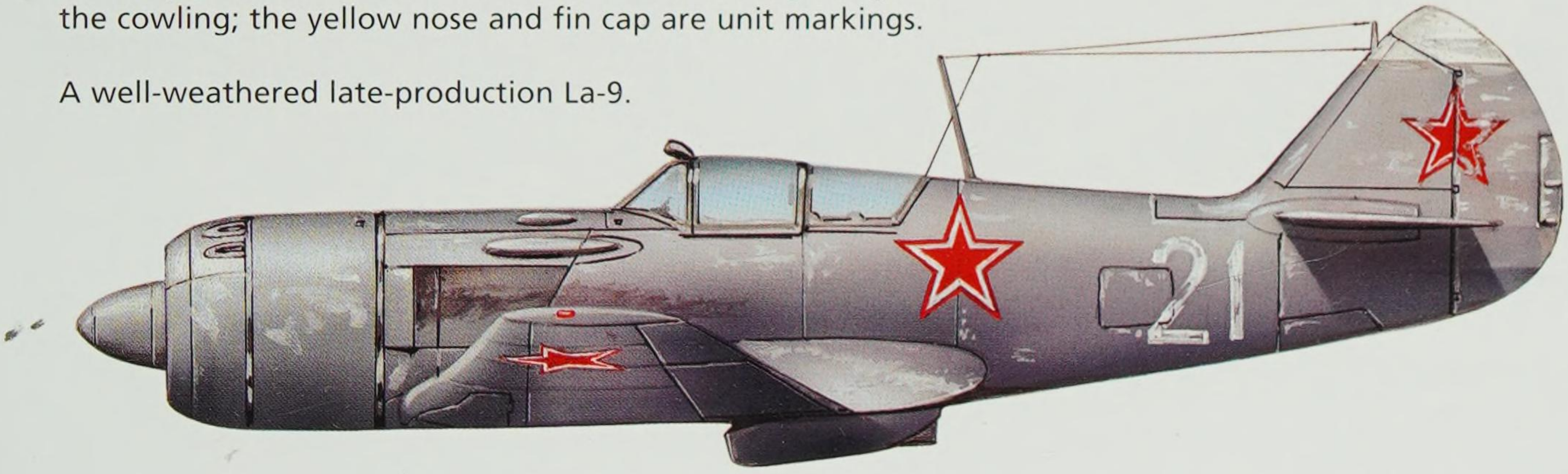
Opposite page: A UTI-La-9 dual-control trainer shows the redesigned canopy with individual sliding sections. This one has been refitted with the complete powerplant of a La-11.



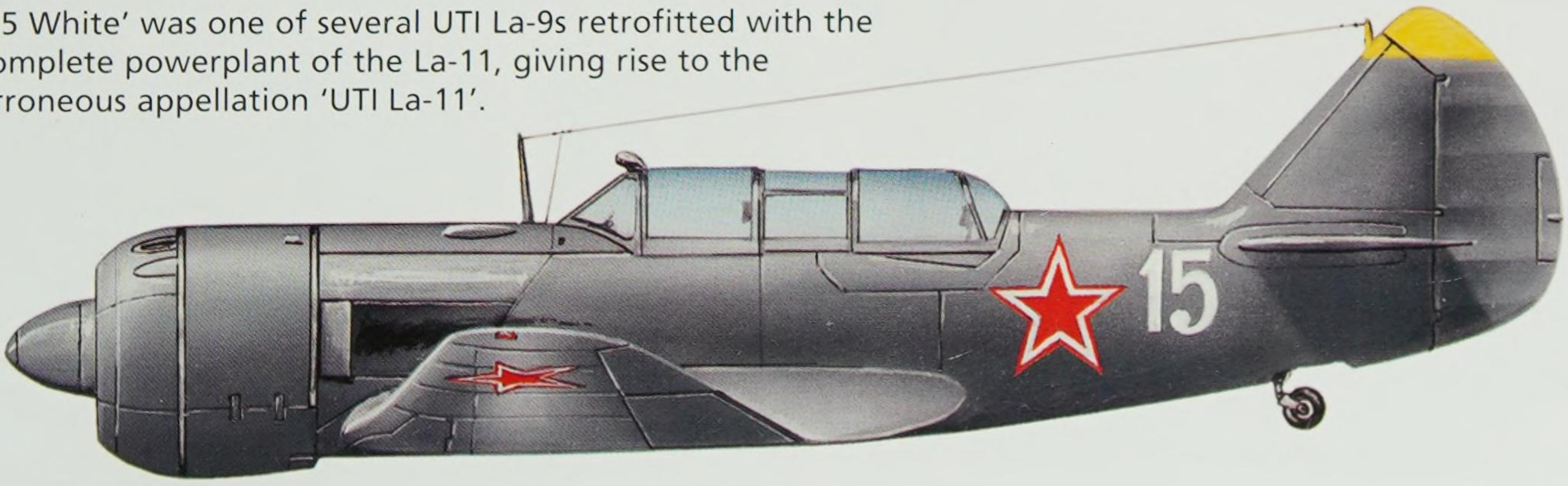


An early-production La-9, with detail of the factory badge on the cowling; the yellow nose and fin cap are unit markings.

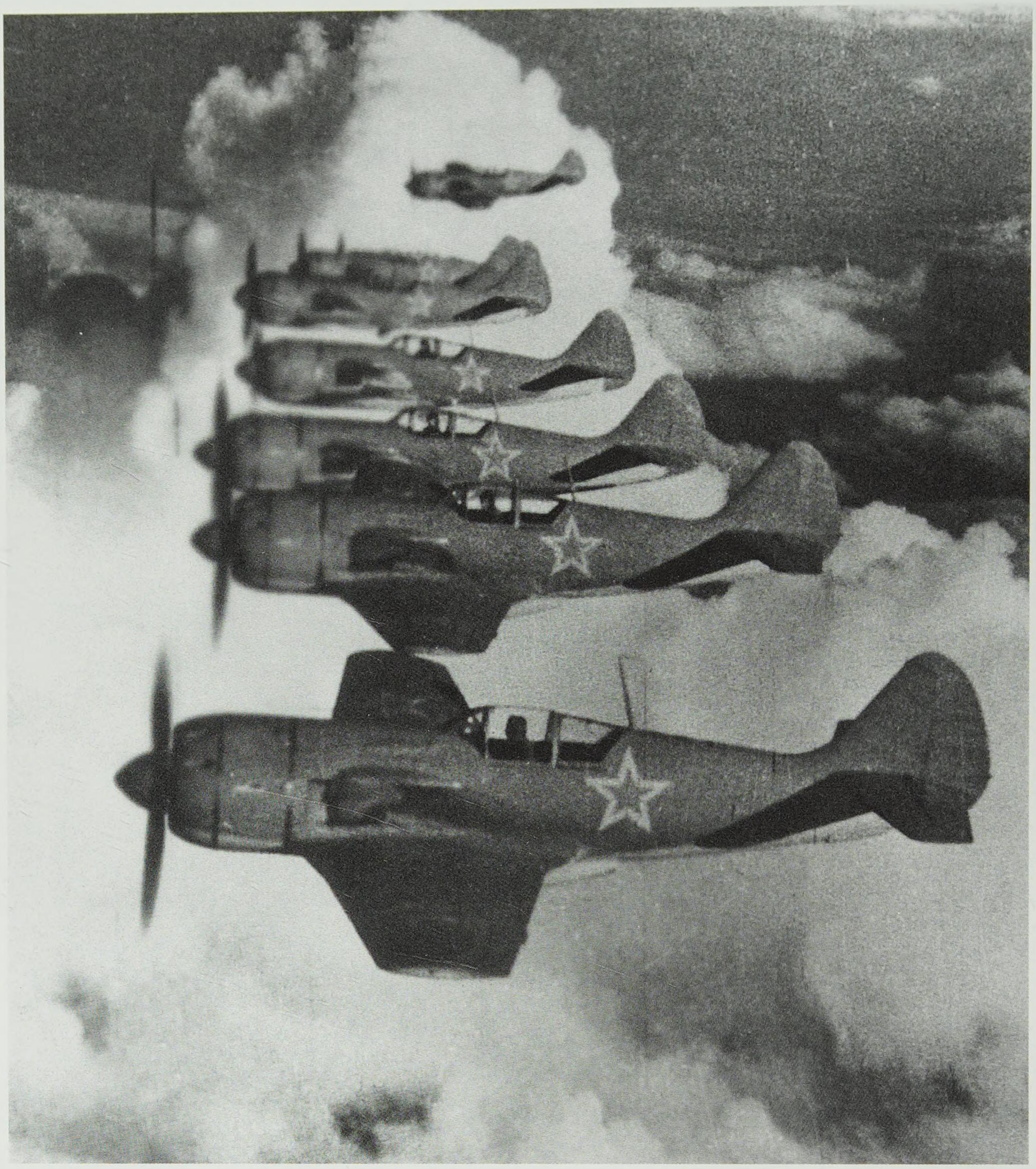
A well-weathered late-production La-9.



'15 White' was one of several UTI La-9s retrofitted with the complete powerplant of the La-11, giving rise to the erroneous appellation 'UTI La-11'.



Eight Gor'kiy-built La-9s formate with the camera ship in line abreast formation. Interestingly, none of the fighters carries a tactical number. The angular tips of the wings and horizontal tail are readily apparent in this view.

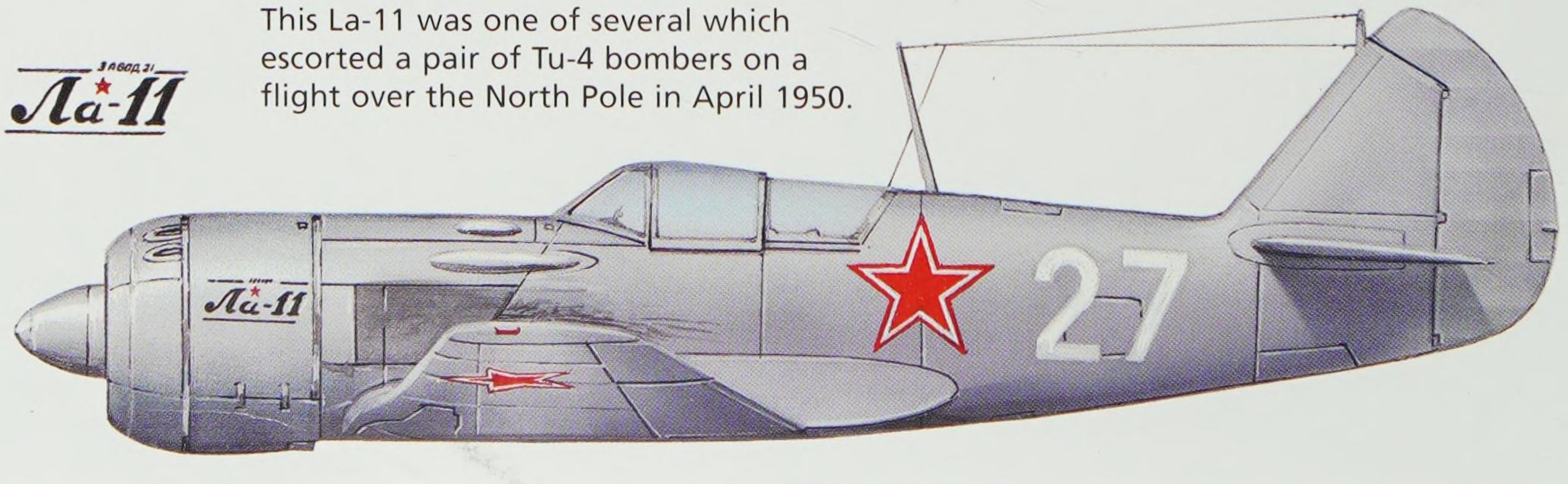


Opposite page: In 1948 three La-11s took part in an expedition towards the North Pole which involved landing on an icefield. The purpose of the expedition was to check the possibility of using icefields as tactical airfields during operations in the Polar regions.

When the La-11 was still under development, someone came up with the idea of using it for defending the Soviet Union's Arctic regions against intruders striking across the North Pole. To this end the fighters were to be deployed at airfields located north of the Arctic Circle – both on the shore and on drifting icefields. This called for a number of experiments associated with the deployment of La-11s at ice airstrips in the High North.

One of the first such experiments took place in 1948. At that time several research

This La-11 was one of several which escorted a pair of Tu-4 bombers on a flight over the North Pole in April 1950.



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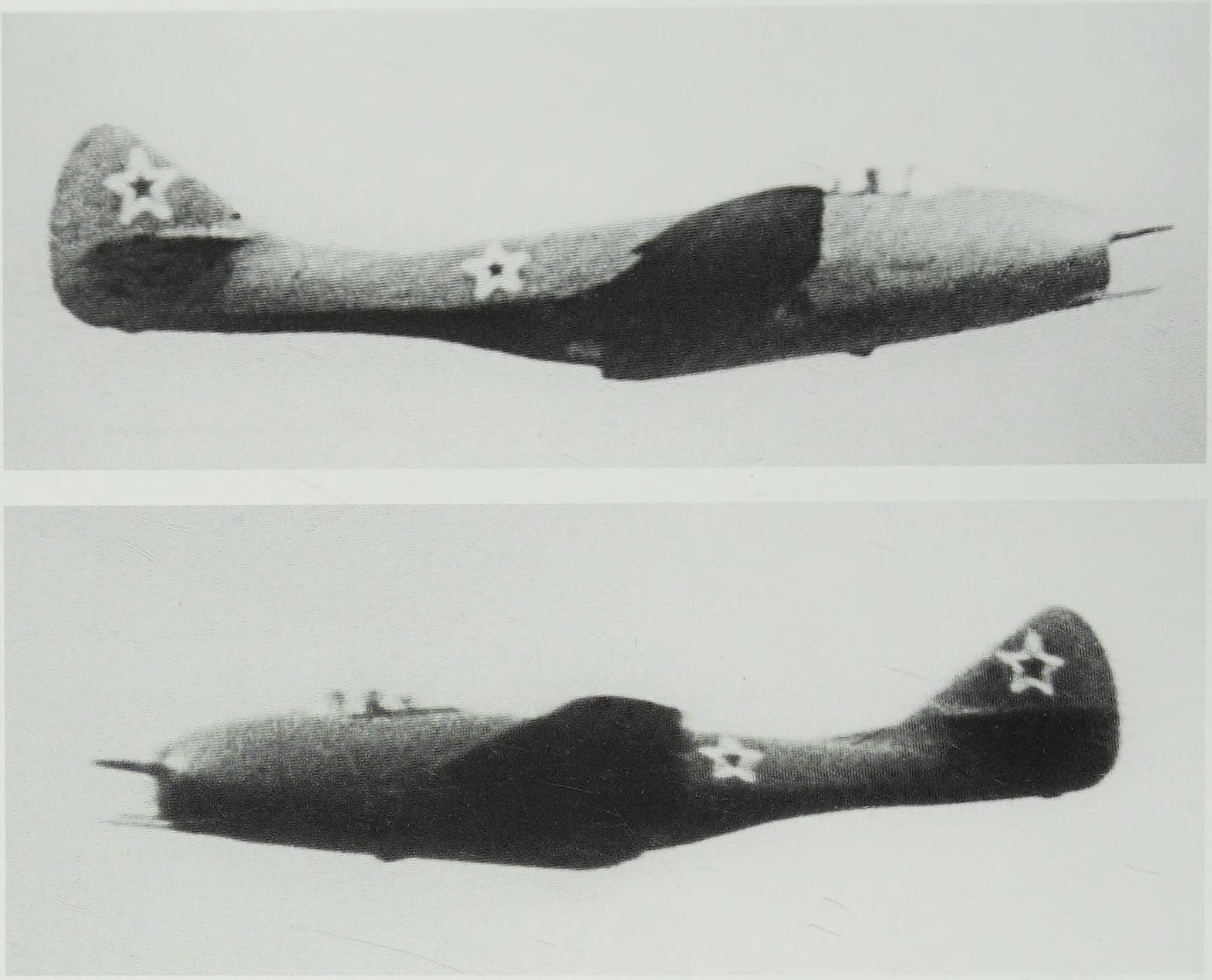
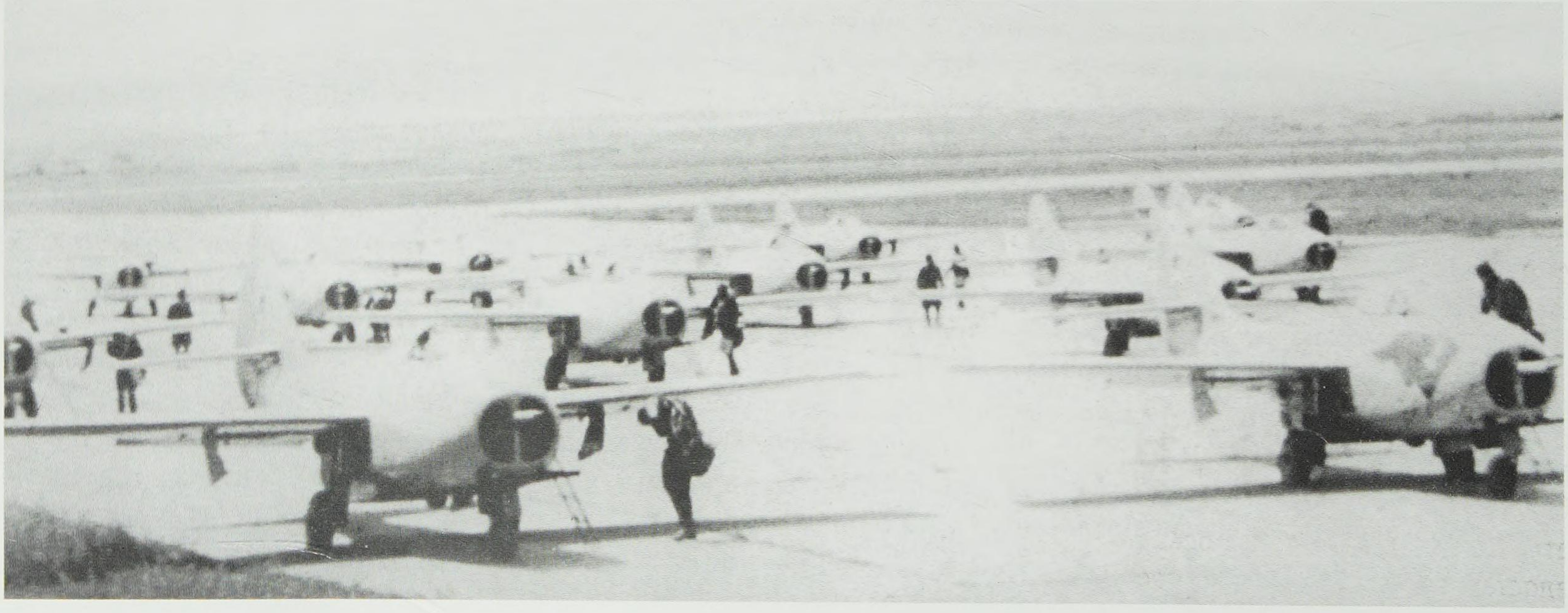


Stills from a ciné film showing the MiG-9 jet fighter in flight.

A batch of early-production MiG-9s lined up prior to a flypast at the 1946 May Day parade. Note the red banner painted on the lead aircraft.

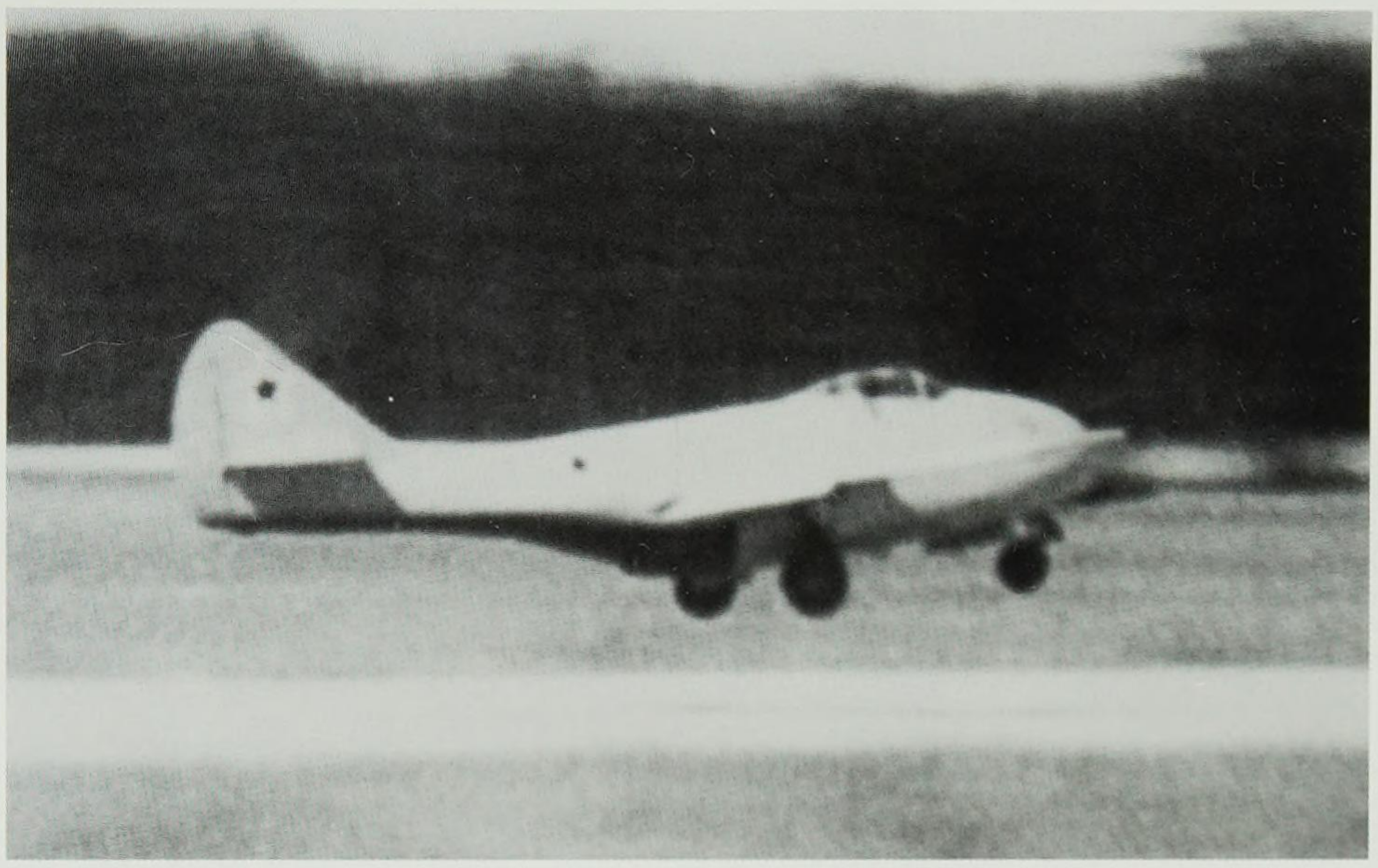
expeditions sponsored by the Soviet Academy of Sciences were working at drifting ice stations in the North Pole area. A decision was taken to send a group of La-11s with the task of landing on an icefield used by the scientists. The expedition was headed by Maj.-Gen. A. A. Kuznetsov, chief of the Main Directorate of the North Sea Route (GUSMP – *__Glahv__noye oopravl__en__iye __Sev__ernovo mor__sko__vo pu__tee__*). Support duties were performed by crews of a Lisunov Li-2 *Cab* transport from the 650th OTAP (*ot__del'__nyy __trahns__portnyy __a__via__polk__* – Independent Airlift Regiment), a Douglas C-47 Dakota from the 1st TAP of the 2nd ADON (*aviadi__vee__ziya o__sob__ovo nazna__chen__iya* – Special Mission Air Division) and an Il'yushin IL-12 *Coach* airliner from the 708th TAP ON (Special Mission Airlift Regiment).

A twin-engined Tu-6 reconnaissance aircraft (aka Tu-2R) served as a pathfinder for three La-11s conducting training in Arctic conditions, with Cape Schmidt and Wrangel Island as their bases. At first the Tu-6, which boasted reasonably good navigation equip-



A production MiG-9 takes off.

A MiG-9 seen immediately before touch-down.

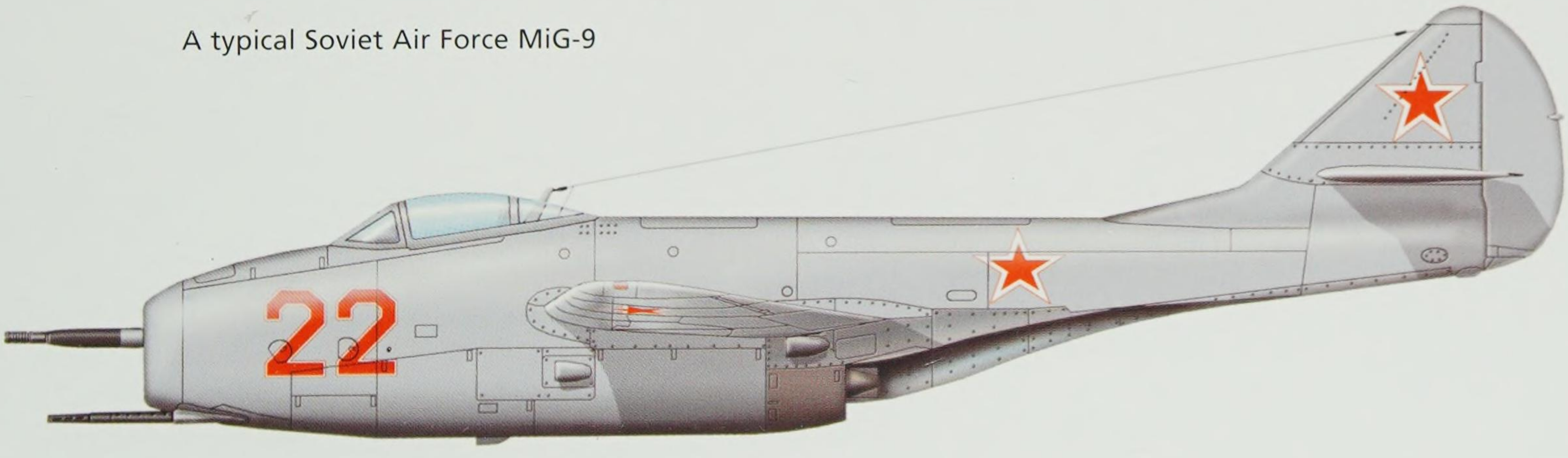


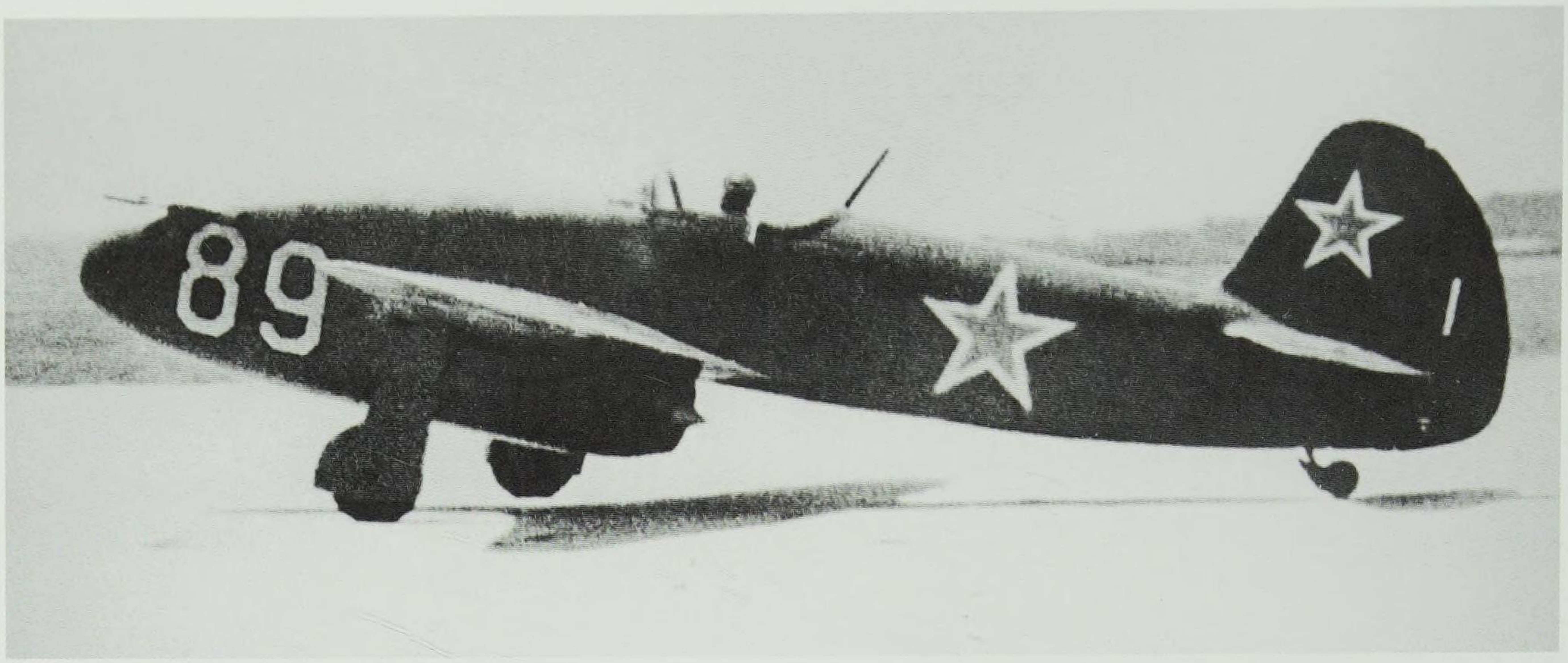
ment, took off from Wrangel Island for a reconnaissance flight, landing successfully on an icefield near the North Pole. Then it returned to the 'mainland' and, when a spell of good weather set in, on 7th May 1948 three La-11s led by the pathfinder set course for the icefield where they made a safe landing. On 8th May, having performed several flights from the icefield, they returned to base. Later, several similar expeditions were undertaken in different areas of the High North.

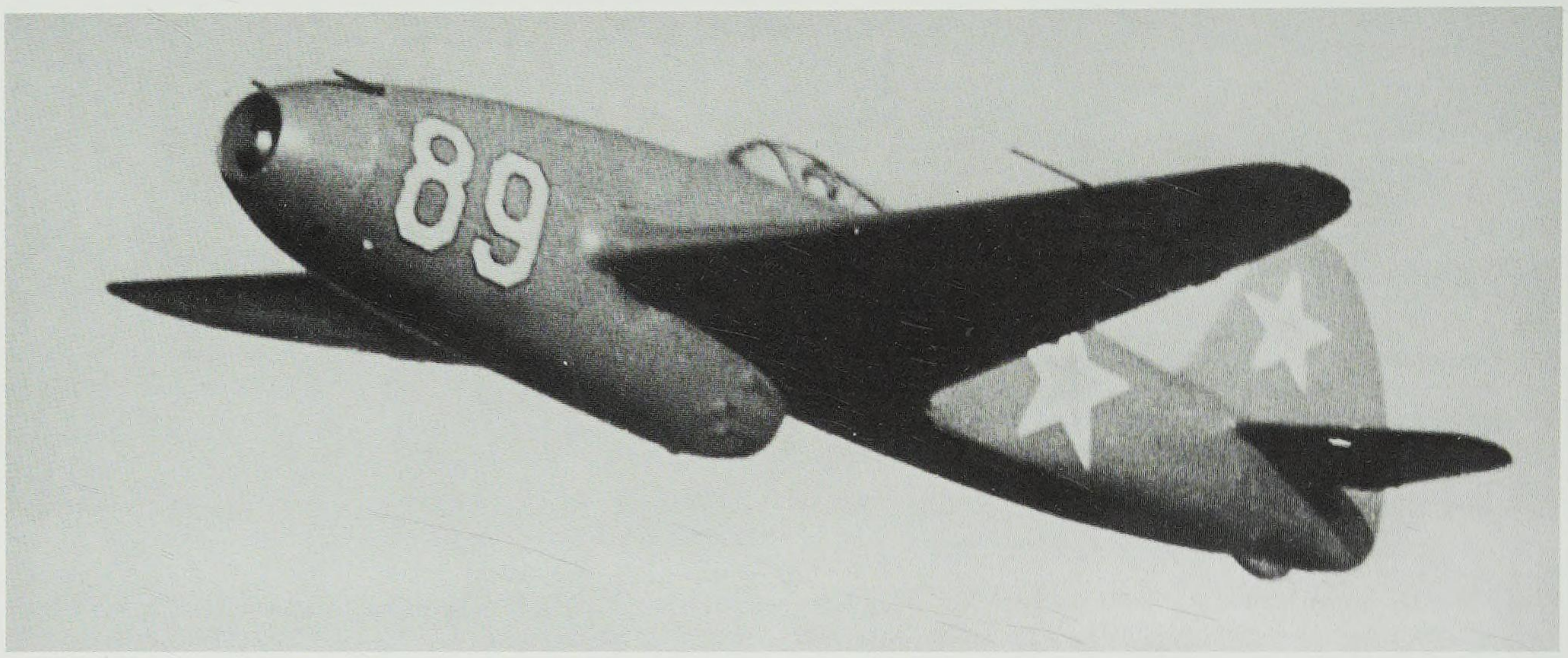
This paved the way for routine patrol flights in defence of the northern frontiers. To ensure this, a number of technical issues had to be tackled; among other things, the La-11 had to be fitted with a de-icing system and the navigation equipment had to be improved. Importantly, it was necessary to ensure the possibility of operating from unprepared snow-covered airstrips.

La-11 fighters of the 1st IAD (*istre**bit**el'naya **a**viadi**vee**ziya* – Fighter Division)/53rd IAD (*istre**bit**el'nyy **a**via**polk*** – Fighter Regiment) were involved in the work in the North Pole area at different times. In December 1949 some of the participants of the expedition were awarded the Hero of the Soviet Union title. The recipients of the award included squadron leader V. D. Borovkov and navigator S. A. Skornyakov (group commander) from the 1st Fighter Air Division, as well as deputy CO of the 53rd IAP V. A. Popov.

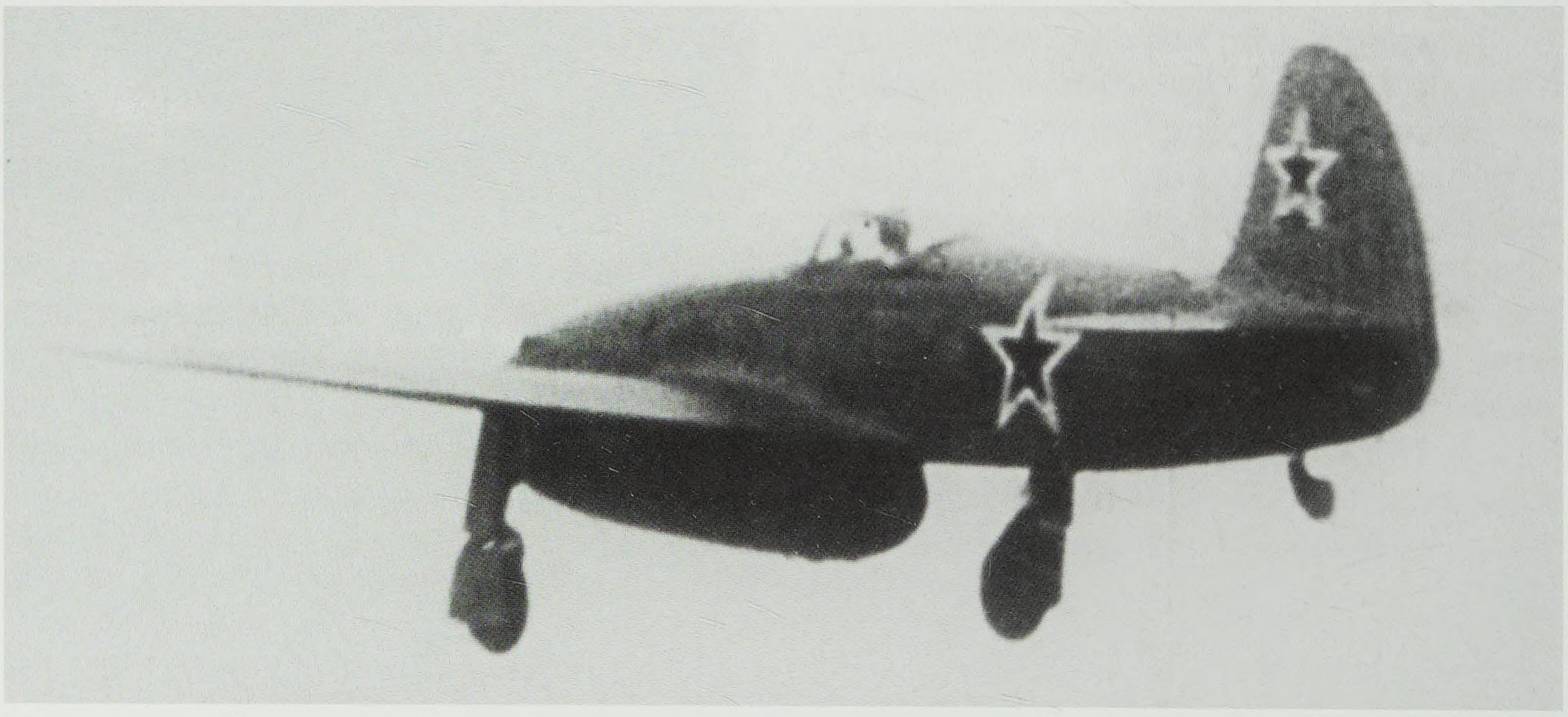
A typical Soviet Air Force MiG-9







Stills from a ciné film showing a production Yak-15 during take-off, cruise flight and landing.



The idea of *ad hoc* airstrips built on drifting icefields occupied the minds of the military for quite some time. However, none of these airstrips ever hosted a unit on constant duty conducting combat patrol missions.

The MiG-9 was the first Soviet jet fighter to fly, and also the first to enter limited service. Despite the MiG-9's obvious shortcomings, it was ordered into production at aircraft factory No.1 in Kuibyshev when the state acceptance trials were still in progress. First, an initial-production batch of ten was manufactured in great haste in 1946 for that year's Aviation Day parade. Next, on 16th December 1946 the Ministry of the Aircraft Industry issued an order requiring plant No.1 to build another 50 MiG-9s in January-April 1947. The haste was due to the wish of the Soviet leaders to demonstrate the nation's air power at the 1947 May Day parade in Moscow. Besides, the Soviet government believed that, for want of something better, one should build aircraft that were available right now and rectify their shortcomings in the course of production.

Incidentally, the abovementioned order envisaged that the batch of 50 should include ten UTI MiG-9 two-seat trainers (*oo***cheb***no-treni***rov***ochnyy istre***bit***el'* – fighter trainer). The production plan for 1948 called for the manufacture of 250 single-seat fighters and 60 UTI MiG-9s. Yet in the long run the trainer never entered production, only two prototypes being converted.

Most of the production MiG-9s were powered by twin RD-20 Srs A2 (BMW 003A) turbojets. The armament comprised one 37-mm Nudelman N-37 cannon and two 23-mm Nudelman/Suranov NS-23K cannons. Once the 48 aircraft intended for the parade and one machine for Mikoyan's OKB-155 had been manufactured in 1947, production of the MiG-9 was suspended pending modifications at the insistence of the Air Force. The Mikoyan OKB introduced a number of changes in May and June 1947. The fighter's fuel system was improved; airbrakes were incorporated into the wing trailing edge, fin area was increased and a fin fillet added to improve directional stability; also, the rudder and elevator skins made of magnesium alloy were replaced by duralumin and the framework of the control surfaces was strengthened. The shape of the lower centre fuselage aft of the engine nozzles was changed in order to ensure a smoother flow of exhaust gases. In 1948 there were plans for fitting the fighter's cannons with devices intended to prevent blast gas ingestion which caused the engines to flame out (one of the MiG-9's bugs).

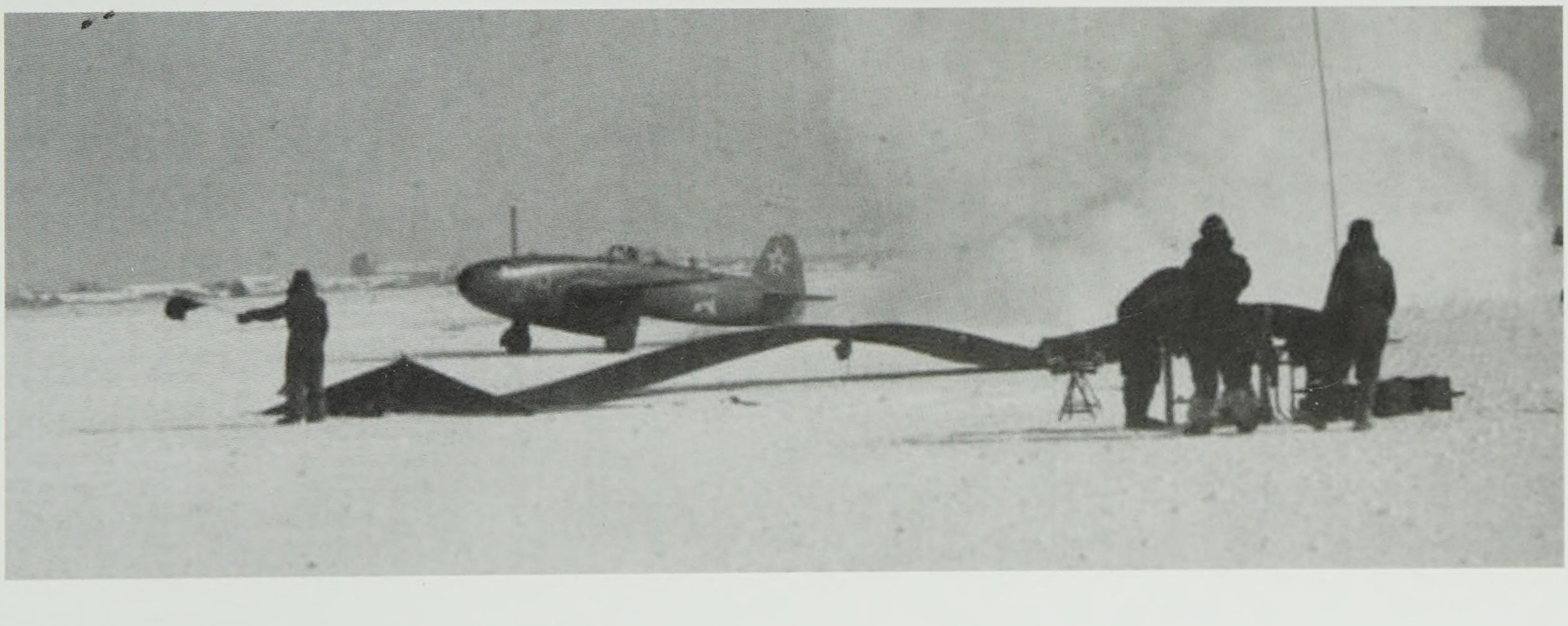
1948 turned out to be a hectic year for the Kuibyshev plant, because already in the spring of, concurrently with MiG-9 production, the plant had to start preparations for manufacturing the more advanced MiG-15. This was the main reason for the failure to incorporate many improvements into production MiG-9s; and to build the dual-control version.

The leaders of OKB-155, Artyom I. Mikoyan and Mikhail I. Gurevich, were awarded the State Prize for creating the first Soviet jet fighter.

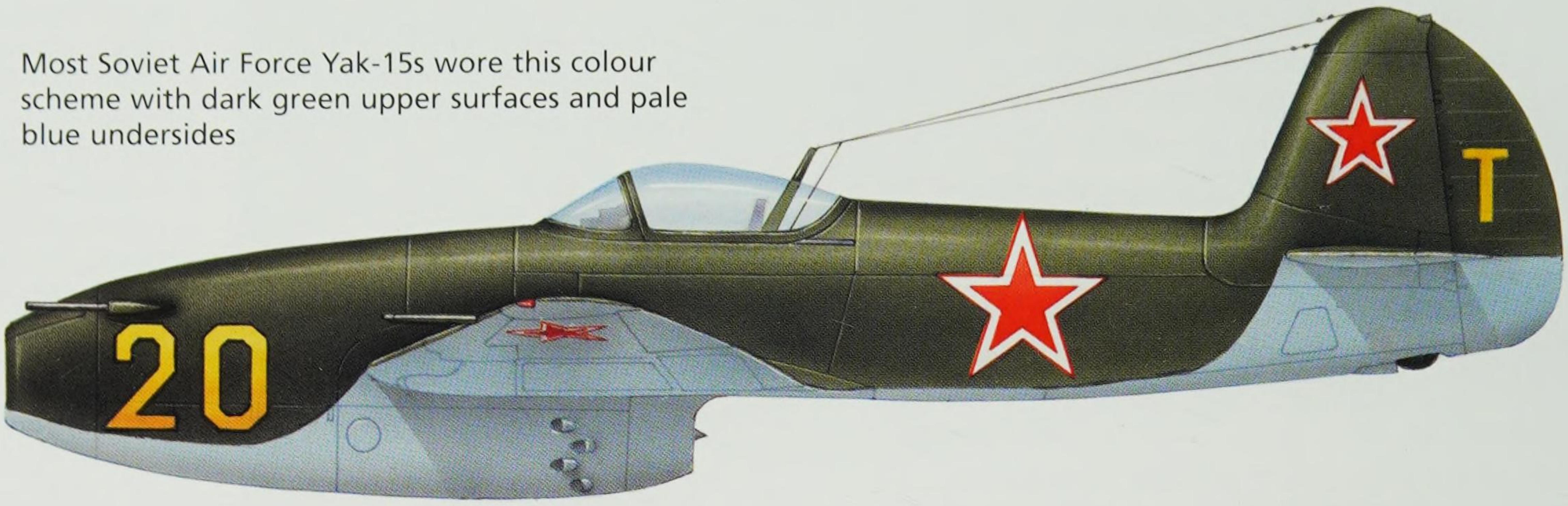
According to information published in the press, production MiG-9s were operated by regiments of the 1st VA (*Voz***doosh***naya*

A still from a ciné film showing a flight of initial-production Yak-15s in Vee formation during a rehearsal of the 7th November 1946 military parade. The nearest aircraft has two cannons.

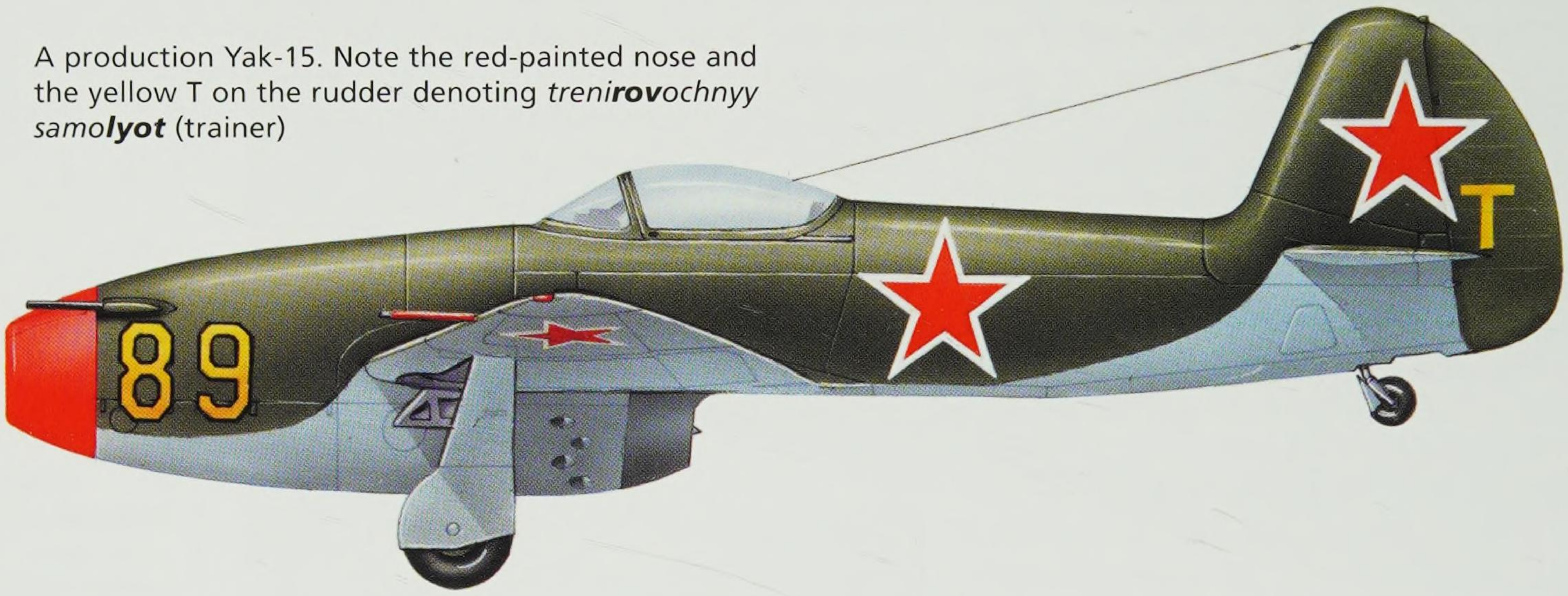
A Soviet Air Force pilot clad in a leather topcoat and leather flying helmet with goggles poses beside his Yak-15. Unusually, this aircraft is equipped with a gun camera on top of the windscreen.



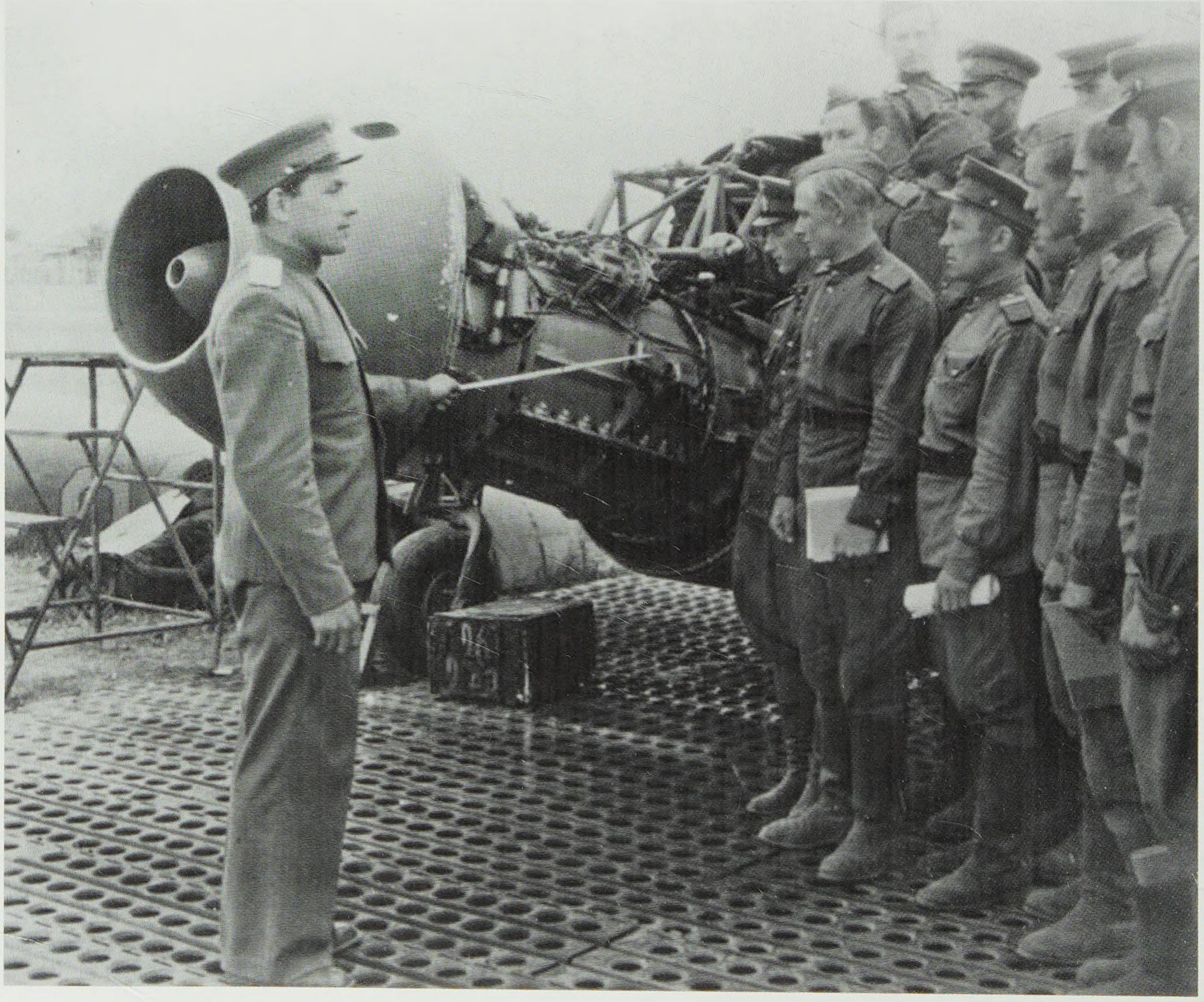
A Yak-15 creates a local snowstorm as it taxies on a snow-covered tactical airfield.



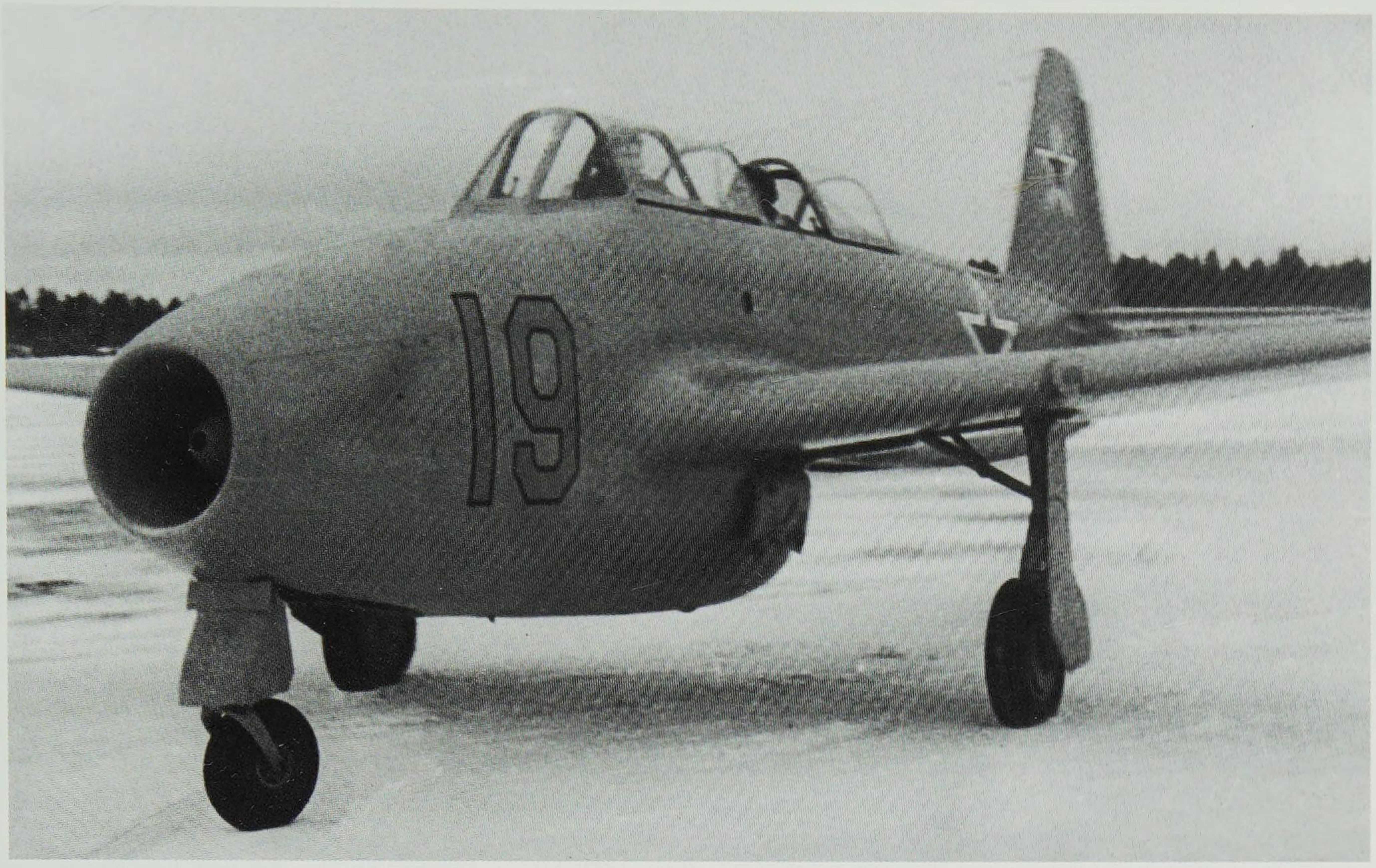
Most Soviet Air Force Yak-15s wore this colour scheme with dark green upper surfaces and pale blue undersides



A production Yak-15. Note the red-painted nose and the yellow T on the rudder denoting *treni**rov**ochnyy samo**lyot*** (trainer)



An instructor at a flying college briefs new Yak-15 pilots on the fighter's power-plant, which is uncowled for this purpose.

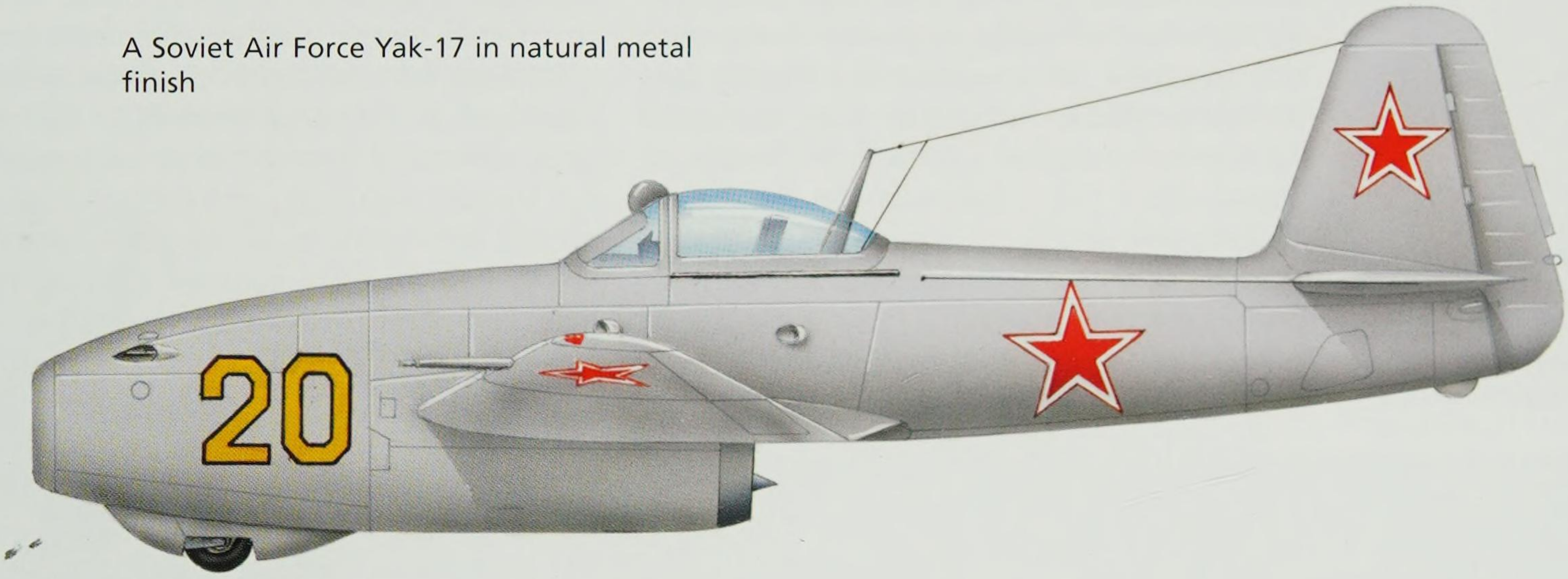


A production Yak-17UTI serialled '19 Yellow' about to taxi out for a training sortie.

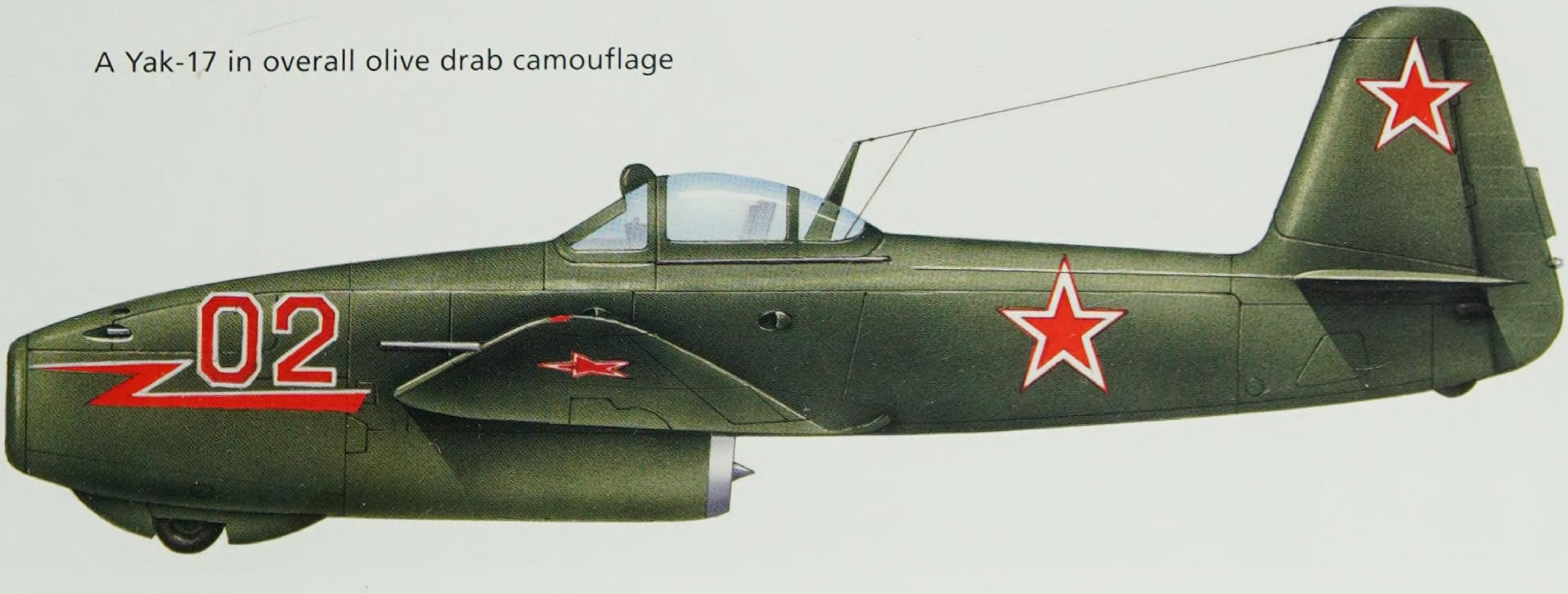
***ar**miya* – Air Army) based at Kobrin in Belorussia, the 7th VA (based near Dolliar railway station), the 14th VA based near the town of Gorodok (the name of which, ironically, itself means 'small town'), the 15th VA based near Kaliningrad and in the 16th VA stationed in East Germany (the unit operating MiG-9s was based near Berlin). In 1949 the MiG-9 was mastered by pilots of the 303rd IAD/177th IAP stationed in the vicinity of Yaroslavl'.

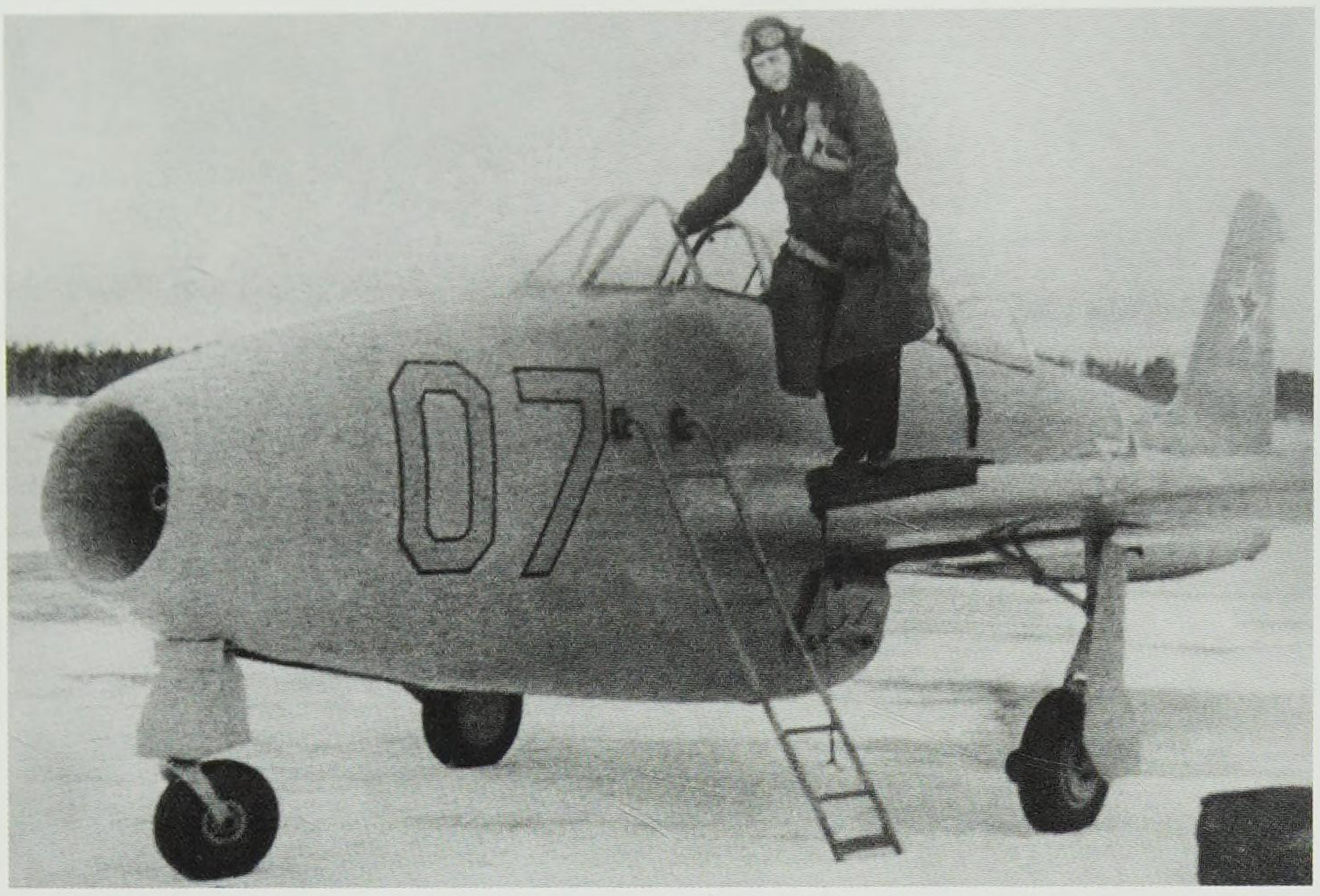
Yet the MiG-9 was an interim type; the advent of the swept-wing MiG-15 and La-15

A Soviet Air Force Yak-17 in natural metal finish



A Yak-17 in overall olive drab camouflage





A pilot climbs into the front cockpit of Yak-17UTI '07 Yellow'.

rendered it obsolete. The production run was limited to 610 MiG-9s built in the course of three years.

The 'taildragger' Yak-15 was similarly an interim type. By the early summer of 1947 the Soviet Air Force had more than 50 Yak-15 fighters on strength – though some of them lacked armament or had but one cannon; they, too, participated in the 1947 May Day parade in Red Square. That year also saw the Soviet Union's first aerobatics displays by jet aircraft, including the *Feather*. Even before GK NII VVS had officially pronounced the type fully aerobatic, service pilots had illegally performed aerobatics in the Yak-15 at the Soviet Air Force's Aircrew Conversion Centre in Lipetsk. Now, Col. I. Poloonin was the first to perform solo aerobatics in a Yak-15 in front of the watching crowds at Tushino; this was followed by a breathtaking aerobatics display by a flight of Yak-15s led by Lt.-Col. Nikolay I. Khramov, Hero of the Soviet Union (HSU).

Ground crews check the pilot's gear before a sortie in the same Yak-17UTI.

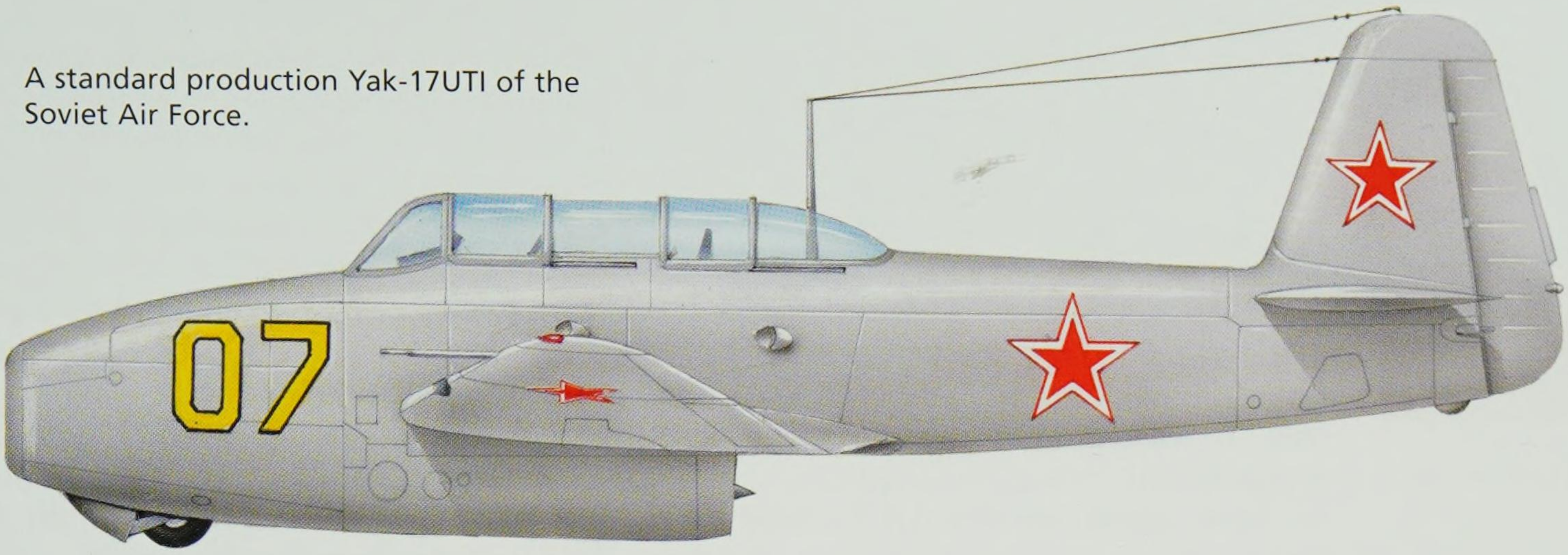
The 1948 Tushino air display featured aerobatics performed by assorted jets, including the Yak-15. By then Gen. Yevgeniy Ya. Savitskiy, twice HSU, had organised a display team flying the Yak-15; it was staffed by four military pilots – P. Sereda (HSU), N. I. Khramov, V. Yefremov and P. Solov'yov. At the 1949 Tushino event group aerobatics were performed by a quintet of Yak-15s.

Production of the Yak-15 ended in 1947 after a total of 280 had rolled off the assembly line in Tbilisi. The type remained in Air Force service for a few more years.

The Yak-15's refined tricycle-gear derivative, the Yak-17, was more fortunate, being built in much greater numbers (a total of 430 aircraft was produced, including 279 in 1948) and having a two-seat trainer version. Deliveries to the Soviet Air Force took place mainly in 1948-50; for example, the 472nd IAP, which was based at Kursk-Vostochnyy airport for many years, received the type immediately on establishment in the spring of 1950. By 22nd July the unit had become fully operational in the PVO system.

Yet, being a straightforward adaptation of the Yak-15, the Yak-17 shared all of the latter's weaknesses, including very limited range and inadequate armament, which made its value as a fighter rather questionable. Furthermore, it suffered from a bunch of 'diseases' which were typical of first-generation jet fighters at large – first and foremost poor engine reliability; turbine burnouts, compressor stalls and engine fires were quite frequent. Also, the RD-10 had a rather complex starting procedure; first, a two-stroke starter engine (quite capricious in itself) was started, the turbojet's spool was spun up and petrol was fed into the combustion chamber to provide the initial light-up before jet fuel (kerosene) was fed.

On the other hand, the Yak-17 was nimble and easy to fly, with pleasant handling. The low cockpit noise level, good view from the cockpit (thanks to the tricycle landing gear), good field performance and relatively high speed were advantages over piston-engined aircraft. Pilots had to remember that the jet engine had poor acceleration compared to the piston engine, but once power had been applied the jet fighter accelerated much faster. Due to the higher speed aerobatic manoeuvres were performed with larger radii but were still impressive; in 1949 an aerobatic team comprising nine Yak-17s and led by Lt.-Col. N. Shool'zhenko put on an aerobatics display at the traditional Tushino air show.



A standard production Yak-17UTI of the Soviet Air Force.

The Yak-17 did not enjoy a long service career in the Soviet Union. Thus, as early as December 1950, a mere six months after the type achieved initial operational capability, the 472nd IAP started converting to the MiG-15, the most advanced Soviet fighter at the time. The reason was not only the availability of higher-performance aircraft but also the short service life of the Yak, which had a welded truss-type fuselage.

Yet, despite its shortcomings, the *Feather* played an important part in the strengthening of the Soviet Union's defences at the start of the Cold War. The similarity of the cockpit layout and field performance to those of the propeller-driven Yaks, coupled with the availability of the Yak-17UTI trainer, facilitated the pilots' transition to jet aircraft considerably. Documents of the day indicate that it was common for pilots converting to the MiG-15 (the most advanced Soviet jet fighter at the time) to make several flights in the Yak-17UTI before flying the faster and heavier MiG, since the latter did not yet have a trainer version. For example, when the 50th IAP stationed at Kimry (Moscow Region) converted to the MiG-15 in 1950, several Yak-17UTIs were delivered along with the *Fagot-As*, which helped the pilots master the new type quickly. K. V. Sookhov (HSU), who in 1946-51 was a cadet of the Air Force Academy in Monino, recalled that in his fourth year he received operational training in a PVO fighter regiment stationed near Kaluga and the unit used the same technique, with a mix of MiGs and two-seat Yaks. The flight log of Y. S. Ablazov, who

IL-10 pilots pose with one of the unit's aircraft in the early post-war years. Note the variations in the uniform.

was the Deputy CO (Combat Training) at the Stalingrad Military Pilot College in 1949, testifies that during his transition to jets at the Lipetsk training centre he had to make seven flights in the Yak-17UTI and pass a test in this aircraft's piloting techniques before flying solo in the MiG-15. In subsequent days Ablazov flew both types intermittently; during the two-week training course he logged a total of 1 hour 41 minutes in ten flights on the Yak-17UTI and 2 hours 1 minute in nine flights in the MiG-15.

As a trainer the Yak-17UTI rated fairly highly among Soviet military pilots; yet they also pointed out such shortcomings as the lack of an artificial horizon and the lack of armament, which precluded blind flying training and live weapons training. Even such a supposedly minor thing as the lack of a step for climbing aboard was noted. The chief shortcoming, however, was the extremely limited range – the Yak-17UTI had no provisions for drop tanks, and training flights were confined to the vicinity of the airfield.

The Yak-17 was superseded by the Yak-23 – the last of Yakovlev's jet 'tadpoles' having a pod-and-boom layout with the engine in the nose. In the Soviet Union the Yak-23 was delivered primarily to fighter regiments of the North Caucasus Military District and Volga Military District. The fighter was intended mainly for air-to-air combat at low and medium altitudes. In the opinion of pilots who flew it, the Yak-23 was a good aircraft; it was easy to fly, possessing a high rate of climb and good manoeuvrability. Other important merits were the fighter's ease of maintenance and the ability to operate from grass strips.

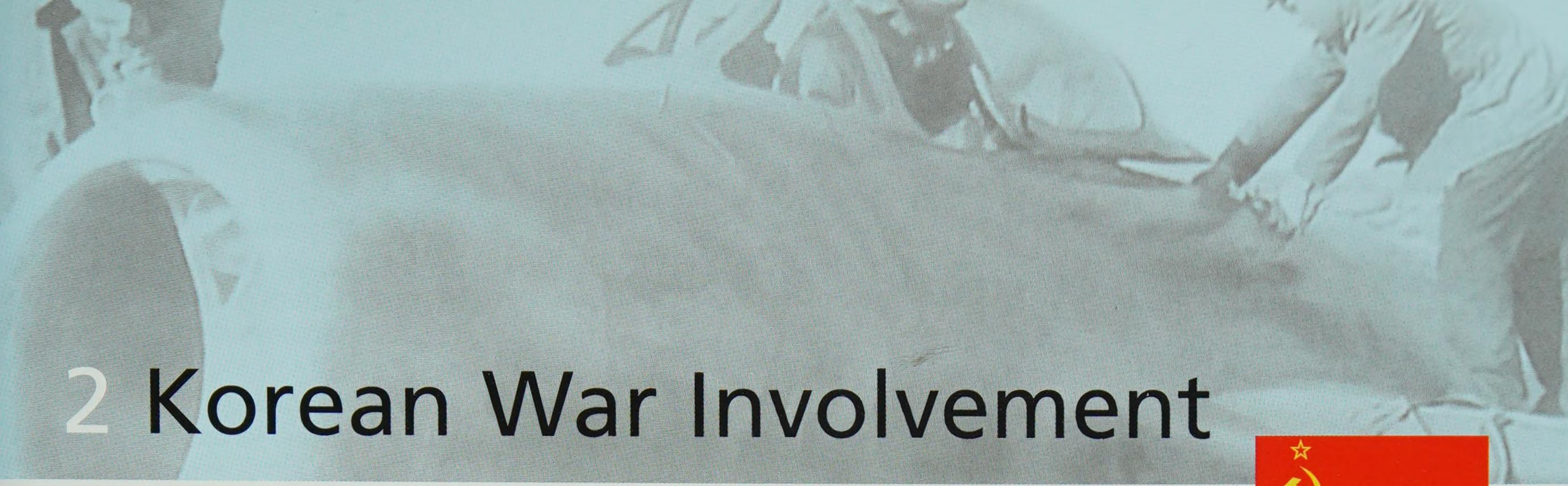
It was in the North Caucasus, at an airfield near the city of Groznyy (the capital of the Chechen-Ingush Autonomous Soviet Socialist Republic), that service trials of the first production machines took place. The pilots' comments were mostly favourable; notably, the fighter could easily perform aerobatics. However, in the process of operation some production defects were revealed (for example, the cockpit canopy jammed and could not be jettisoned in an emergency; fumes from the engine cooling manifold entered the cockpit and cracks were discovered in the main undercarriage struts). There were also cases of the nitrogen bleeding from the shock absorber of the nose landing gear strut.

The Yak-23 also had a few other shortcomings which came to light during operation of the type in other units. At Mach 0.8 the aircraft became directionally unstable. The RD-500 (Rolls-Royce Derwent V) engine was installed at a nose-up angle, which resulted in a significant pitch-up force when the throttle was advanced rapidly; this hampered the conduct of air combat where precise manoeuvring was essential. Such was the experience of the pilots who had volunteered for participation in the Korean War. Quite possibly all these shortcomings contributed to the decision to terminate production of the Yak-23.

Hence the Yak-23's Soviet Air Force career was rather brief. In July 1950, when the Soviet fighter units began re-equipping with the MiG-15, the Yak-23s were exported to the Soviet Union's satellite nations in Eastern Europe (Bulgaria, Czechoslovakia and Poland).

Summing up the shape of the Soviet Tactical Aviation in the immediate post-war years, we may say that hardware was by no means the main factor shaping its power. Even though some units had disbanded after the cessation of the hostilities, there was still a huge number of air regiments and divisions that were distributed between the Military Districts of the Soviet Union – from the Baltic republics and Transcarpathia in the west to the Far East and from the Arctic Circle to Central Asia. Moreover, a significant number of Soviet Air Force units was stationed abroad, serving with the Group of Soviet Forces in Germany, the Northern Group of Forces (Poland), the Central Group of Forces (which then included Austria and Hungary) and the Southern Group of Forces (which then included Bulgaria and Romania). The Soviet Union had a huge army which would enjoy air support from the fighter, attack and tactical bomber regiments staffed with experienced crews.

The erstwhile brotherhood-in-arms between the East and the West against a common enemy was giving place to a new confrontation; the Cold War was brewing, and both sides possessed nuclear weapons that could turn it hot any moment. Moreover, in its confrontation with the West the Soviet Union was extending military assistance to friendly 'third world' nations. This era lasted more than 40 years and mercifully stopped short of armed conflict that could have led to the Third World War. The Soviet Air Force's Tactical Aviation pilots were at the forefront of this Cold War – and, in fact, participated in some 'hot' wars where the Soviet Union was not formally involved. The first of these was the Korean War, which is dealt with in the next chapter.



2 Korean War Involvement

Actually, in spite of the title, the Soviet tactical aviation's first post-World War Two involvement in actual warfare was in China (the last Chinese Civil War), and it was there that the famous MiG-15 received its baptism of fire. When the differences between Mao Tse-tung's Communist Party and Chiang Kai-shek's nationalist Kuomintang Party escalated into outright military conflict, the Nationalists were soon confined to Taiwan (Formosa) and the adjoining islands. From there the Republic of China Air Force (ROCAF) could still launch air raids against the mainland with which Mao's People's Liberation Army Air Force (PLAAF) could not cope. Beijing turned to Moscow for help, and a treaty on (among other things) military co-operation was signed on 13th February 1950.

In the spring of 1950 the elite 29th GvIAP from Kubinka AB, then flying MiG-15s *sans suffixe*, was deployed to eastern China and seconded to the 106th IAD of the Air Defence Force (PVO) under Lt.-Gen. Pavel F. Batitskiy. Its mission was to protect Shanghai from ROCAF raids and prevent Taiwanese ships from going up the Yangtze River. Shanghai was a base from where the People's Liberation Army prepared to invade the Chowshang Islands occupied by the Kuomintang – and eventually Taiwan itself.

Initially the unit was based at Hsuichow AB, later moving to Dachang AB near Shanghai. Since the Soviet Union was not officially involved in the conflict, the aircraft were painted in PLAAF markings for appearance's sake and the pilots wore Chinese uniforms.

The air war in China was not very intensive; still, 29th GvIAP pilots managed to score two 'kills'. On 28th April 1950 Maj. Keleynikov, the unit's deputy CO, damaged a Taiwanese Lockheed P-38 Lightning reconnaissance aircraft which crashed on the Chowshang Islands. On the night of 11th/12th May a flight of MiGs intercepted three ROCAF Consolidated B-24 Liberator bombers and shot one down at point-blank range; the other two bombers made off. There was also a 'friendly fire' incident on 9th August 1950 when a PLAAF Tu-2 bomber flying from Nanking to Shanghai entered the area protected by the 29th GvIAP without clearance or warning. Two fighters scrambled to intercept and shot it down, mistaking it for an ROCAF North American B-25 Mitchell; the Chinese military acknowledged their fault.

Lt.-Col. Yevgeniy G. Pepelyayev (right), the future Korean War ace, at Kubinka AB in 1950.

Previous page: Red-nosed 64th IAK MiG-15*bis* fighters wearing unusual two-digit serials '03 Blue', '07 Blue', '12 Blue', '22 Blue', '13 Blue' (!), '19 Blue', '17 Blue' and 10 Blue'.

In addition to MiGs, in 1950 a number of La-11 piston-engined night fighters arrived in China. They were flown by a Soviet unit – the recently formed 351st IAP, which was based at Shanghai until the end of the year; in early 1951 it was transferred to Dal'niy (Talien). In the summer of 1950 the unit's personnel began conversion training of Chinese airmen who were to fly the closely related La-9.

The La-11s deployed in China had frequent tussles with USAF Lockheed P-38 Lightning and North American P-51D Mustang fighters. One of these encounters took place on the morning of 2nd April 1951, when a pair of La-11s intercepted and destroyed two Mustangs which had intruded into Chinese airspace.

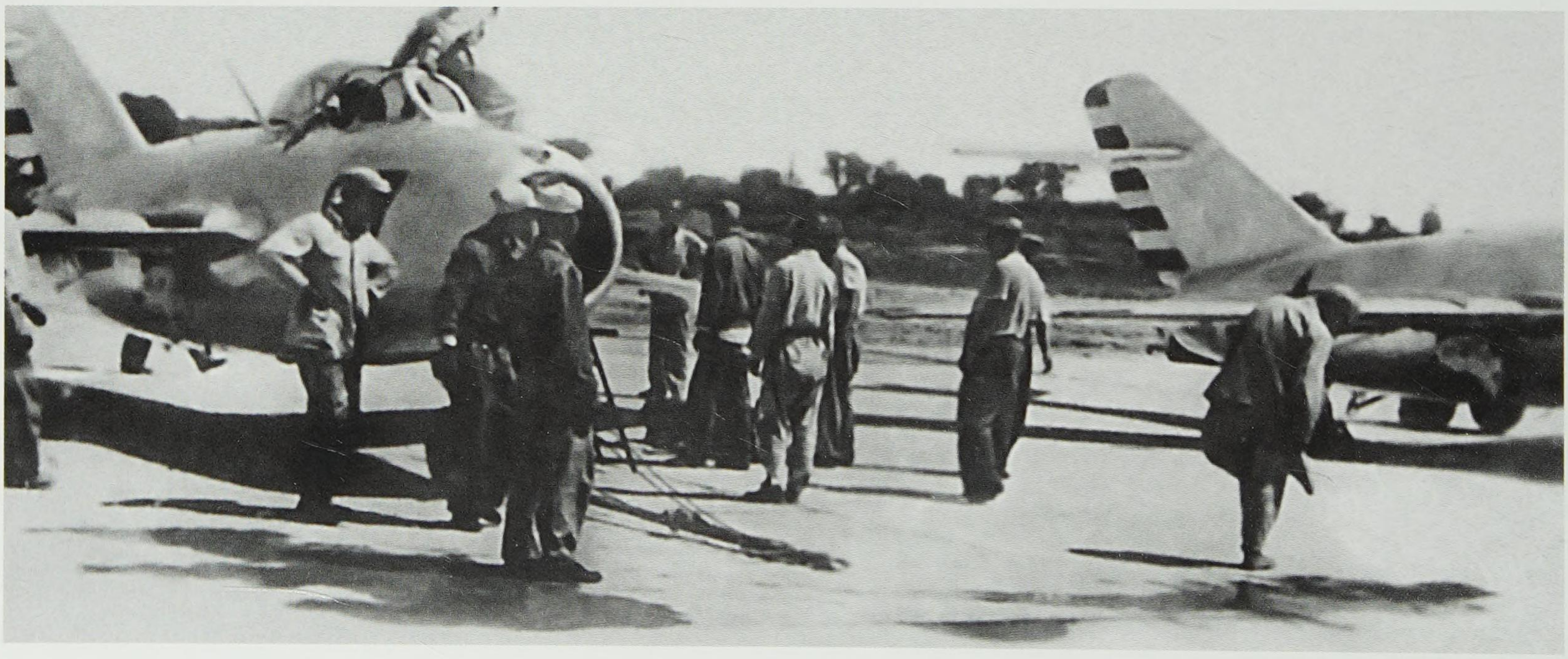
However, the fighting in China was peanuts as compared to the Korean War which began on 25th June 1950. When the United Nations coalition forces began inflicting defeat upon defeat on the North Korean troops, the government in Pyongyang addressed Moscow and Beijing for help.

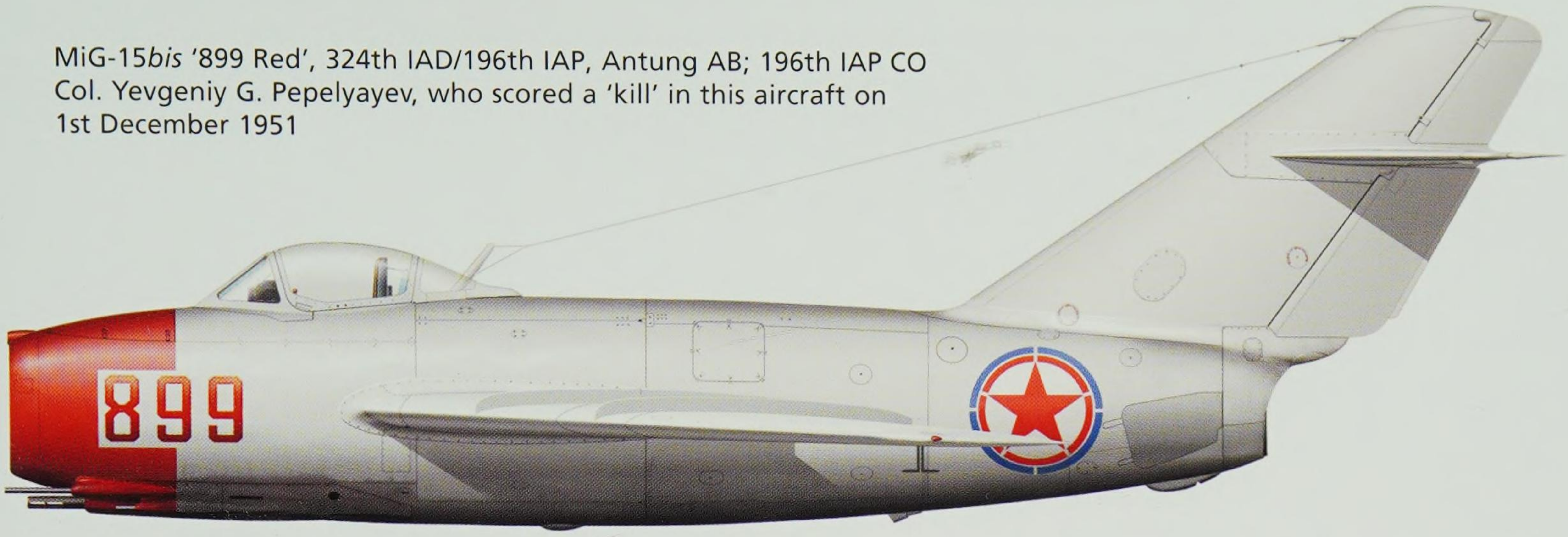
The MiG-15 was the principal fighter type used by the communist powers on the Korean theatre of operations; the first *Fagots* arrived in November 1950. It has to be said that in Korea the MiG-15s were largely flown by Soviet units (the actions of the Chinese-Korean Joint Air Army (JAA) fall outside the scope of this book); thus, again North Korean markings were applied for appearance's sake, since the Soviet Union was not officially involved. (At first the Soviet Air Force MiG-15s in Korea wore Chinese star-and-bar markings but these quickly gave way to North Korean roundels.) Moreover, in a rather naïve attempt to hide their true identity, Soviet pilots were initially ordered to speak Chinese or Korean on the radio to fool would-be eavesdroppers (!), but this stupid requirement was quickly withdrawn as it hampered combat co-ordination and put the lives of pilots at risk.

The participation of Soviet pilots in the war can be divided into three stages: November 1950 to April 1951, April 1951 to January 1952 and from January 1952 to the end of the war (hostilities ceased on 27th July 1953). Stage One began when the first Soviet units hastily redeployed to Chinese bases a short way north of the Yalu River were put into action against the UN forces in an attempt to strip them of air superiority. They succeeded in checking the advance of their adversary, but only until the F-86 came on the scene.

The 28th IAD (comprising the 139th GvIAP and 67th IAP), 50th IAD (comprising the 29th

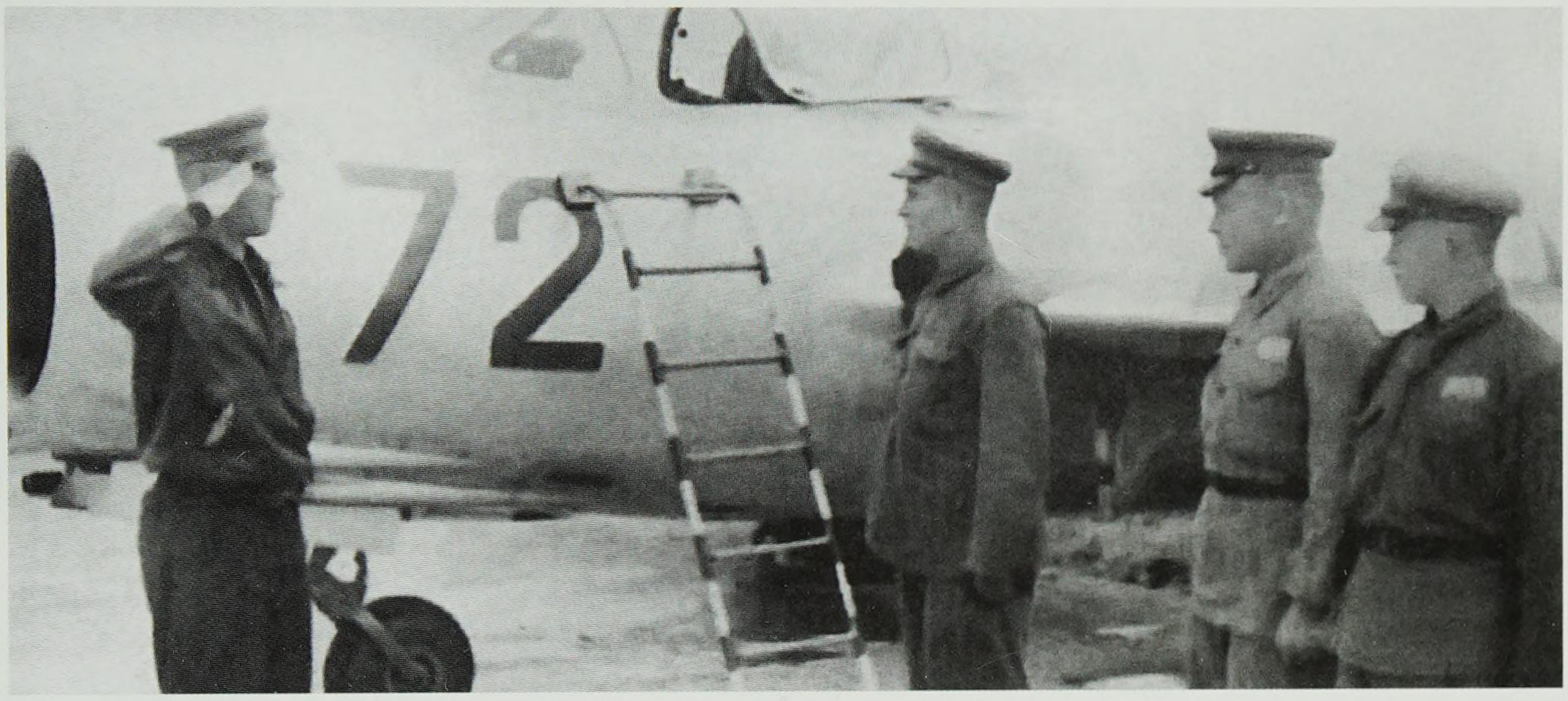
29th GvIAP MiG-15s, including 67 Red at Dachang AB, China, in 1950. The fighters wear contemporary PLAAF markings; note the red/white striped rudders.





MiG-15*bis* '899 Red', 324th IAD/196th IAP, Antung AB; 196th IAP CO Col. Yevgeniy G. Pepelyayev, who scored a 'kill' in this aircraft on 1st December 1951

GvIAP and 177th IAP) and 151st GvIAD (comprising the 28th GvIAP and 72nd GvIAP) were the first to arrive. The three divisions became the first components of the 64th IAK (*istre***bit***el'nyy* **a***via***kor***pus* – fighter corps) formed in late November from VVS, PVO and Pacific Fleet Air Arm units specifically for fighting in Korea. In addition to fighter units, it



Technician Guards Lt. Myakishev (centre) reports to pilot Guards Capt. Choomakov that the aircraft (MiG-15 '72 Red', is ready for a mission. Dachang AB, the summer of 1950.

29th GvIAP/Sqn 2 technicians receive a political brief directly on the flight line at Dachang.

The Soviet fighter units making up the 64th Fighter Corps, their 'kills' and losses.

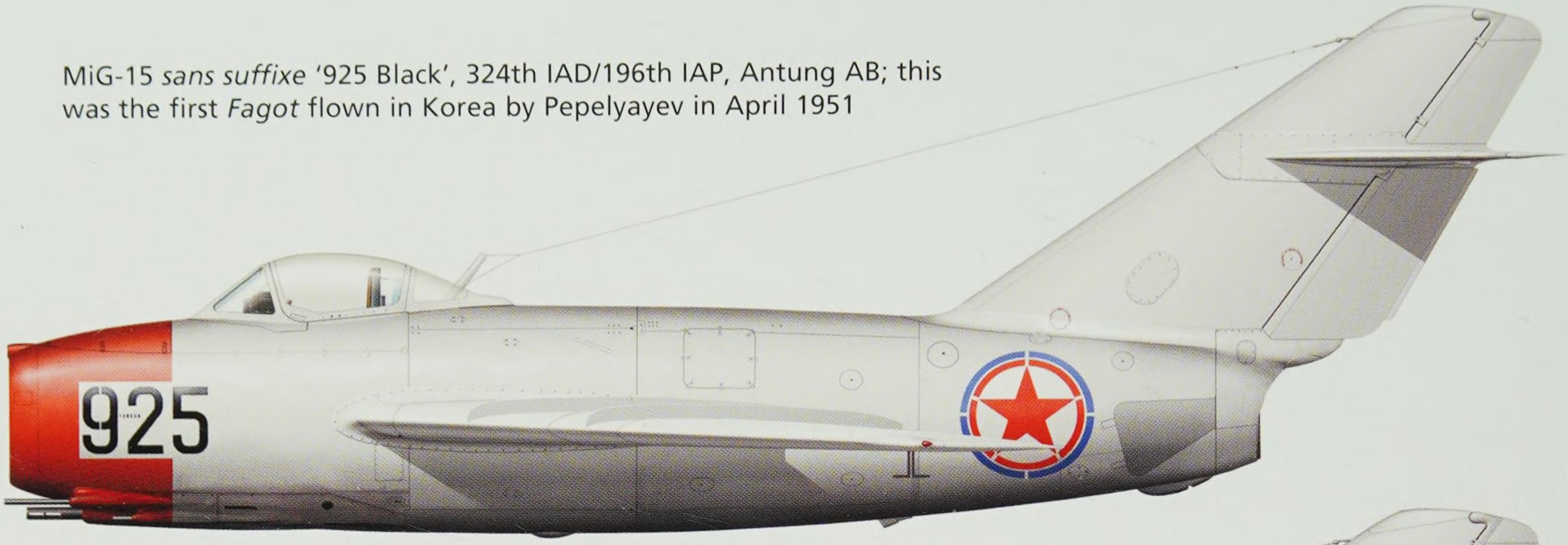
Unit	Tour of duty	Total score	Best pilots/personal score	Losses	Notes
28th IAD					
67th IAP	November 1950/ February 1951	6 (B-29, P-51, F-84, F-86)	Lt (SG) N. I. Podgornyy (1 B-29)	n.a.	
139th GvIAP	November 1950/ February 1951	23 (AD-1, B-29, F-80, F-82 (2), F-84, F-86, F9F, F4U) (2 B-29s, 1 F-82, 1 F-86)	Lt (SG) A. Kapranov, 4 'kills'	1 aircraft 1 pilot KIA	The AD-1, F9F and F4U are not on the unit's official 'kill' list
50th IAD					
29th GvIAP	December 1950/ February 1951	36 (5 B-29s, 10 F-80s, 16 F-84s, 4 F-86s, 1 RB-45C)	Capt. Stepan I. Naoomenko, 5 'kills' (1 B-29, 2 F-84s, 2 F-86s)	5 aircraft 4 pilots KIA	Naoomenko also had six shared 'kills'. Some of the F-84s listed may in fact be F-80s
177th IAP	November 1950/ February 1951	24 (7 F-80s, 7 F-84s, 8 F-86s, 1 RB-29, 1 RT-33)	Maj. P. N. Mikhaïlov, 3 'kills' (1 F-80, 1 F-84, 1 RB-29) Maj. M. Ya. Fomin, 3 'kills' (1 F-80, 1 F-84, 1 F-86)	2 aircraft 1 pilot KIA	+ one more MiG-15 written off as non-combat loss
151st GvIAD					
28th GvIAP	November 1950/ March 1951	23 (B-29, P-51, F-80, F-84, F-86)	Capt. P. B. Ovsyannikov, 4 'kills' (3 B-29s, 1 F-86)	n.a.	
72nd GvIAP	November 1950/ March 1951	13 (B-29, P-51, F-80, F-86)	Capt. A. Z. Borodoon, 3 'kills' (1 B-29, 1 F-80, 1 F-86)	24 aircraft 5 pilots KIA	
324th IAD					
176th GvIAP	April 1951/ February 1952	107 (1 A-26, 1 B-29, 11 F-80s, 22 F-84s, 46 F-86s, 11 Meteors, 6 P-51s, 1 F-94)	Capt. Sergey N. Kramarenko, 13 'kills' (2 F-80s, 9 F-86s, 2 Meteors)	? aircraft 5 pilots KIA	The unit CO Maj. S. F. Vishnyakov had six 'kills'
196th IAP	April 1951/ February 1952	108 (1 B-29, 13 F-80s, 10 F-84s, 72 F-86s, 7 F-94s, 1 RB-45)	Col. Yevgeniy G. Pepelyayev, 19 'kills' (1 F-80, 2 F-84s, 14 F-86s, 2 F-94s)	24 aircraft 5 pilots KIA	Two aircraft shot down by 196th IAP pilots were not identified
303rd IAD					
17th IAP	August-December 1951	108 (3 B-29s, 13 F-80s, 17 F-84s, 71 F-86s, 3 Meteors, 1 'piston-engined shipboard attack aircraft')	Capt. Nikolay V. Sootyagin, 22 'kills' (2 Meteors, 2 F-80s, 3 F-84s, 15 F-86s)	? aircraft 4 pilots KIA	Sootyagin also had two shared 'kills'.
18th GvIAP	August-December 1951	92 (8 B-29s, 2 P-51s, 10 F-80s, 23 F-84s, 44 F-86s, 1 F6F-5, 4 Meteors)	Maj. Lev K. Shchookin, 15 'kills' (2 Meteors, 1 P-51, 2 F-80, 5 F-84s, 5 F-86s)	18 aircraft 8 pilots KIA	27 of the unit's pilots scored 'kills', plus 3 'kills' scored by 64th IAK inspector pilot Maj. Aleksey A. Kalyuzhnyy. The F6F-5 may have been a Skyraider (AD-1) or Corsair
523rd IAP	August-December 1951	102 (7 B-29s, 3 P-51s, 15 F-80s, 26 F-84s, 42 F-86s, 4 Meteors)	Maj. Dmitriy P. Os'kin, 15 'kills' (2 B-29s, 2 Meteors, 1 F-80, 4 F-84s, 6 F-86s) Maj. Stepan A. Bakhayev, 11 'kills' (1 B-29, 3 F-80s, 2 F-84s, 5 F-86s)	? aircraft 5 pilots KIA	26 of the unit's pilots scored 'kills'
97th IAD					
16th IAP	January 1952/ July 1953	26 (5 F-80s, 2 F-84s, 19 F-86s)	Maj. Arkadiy S. Boytsov, 6 F-86 'kills'	12 aircraft 4 pilots KIA	
148th GvIAP	January 1952/ July 1953	41 (4 P-51, 1 F-80, 3 F-84s, 32 F-86s, 1 unidentified 'shipboard aircraft')	Maj. A. T. Bashman, 5 'kills (1 P-51, 4 F-86s)	2 aircraft 2 pilots KIA	

included anti-aircraft artillery (AAA), air traffic control (ATC) and communications, and support units. This fairly large group was initially commanded by Col.-Gen. Stepan A. Krasovsky who had a lot of experience leading air units in the Great Patriotic War. Over the three years of the war, ten Soviet fighter divisions and 29 fighter regiments equipped with the MiG-15 saw action in Korea as part of the 64th IAK.

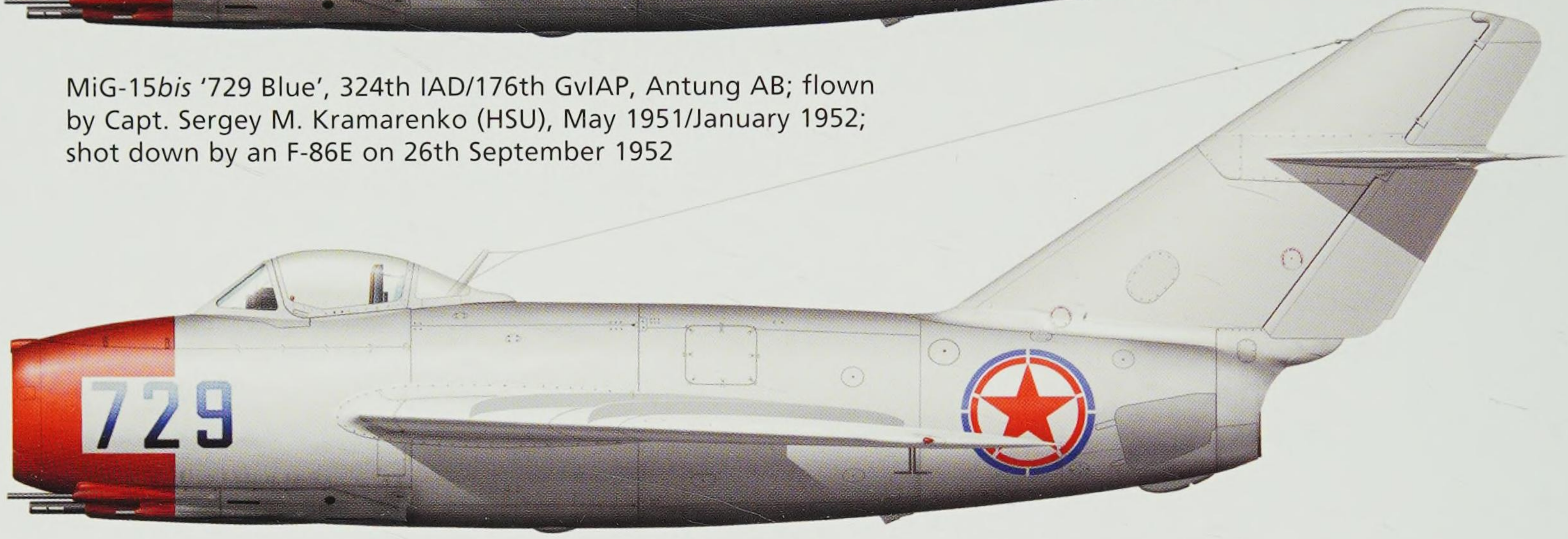
The main task of the 64th IAK was the defence of bridges and power stations on the Yalu River. In December 1950 the 28th IAD

190th IAD					
256th IAP	February 1952/ July 1953	16 (F-86s)	Maj. V. N. Zabelin, 8 F-86 'kills'	16 aircraft 5 pilots KIA	Zabelin had previously shot down an F-84 while with the 821st IAP, making his total score 9 'kills'
494th IAP	February 1952/ July 1953	23 (6 F-84s, 17 F-86s)	Capt. Ye. A. Pomaz, 11 (?) 'kills'	20 aircraft 6 pilots KIA	Sqn 3 alone lost 11 MiG-15s and 2 pilots
821st IAP	February 1952/ July 1953	44 (3 P-51, 4 F-80s, 8 F-84s, 29 F-86s)	Lt.-Col. G. F. Dmitryuk, 5 'kills' (1 F-80, 1 F-84, 3 F-86s) Maj. A. A. Olenitsa, 5 'kills' (1 P-51, 1 F-80, 2 F-84s, 1 F-86) Maj. A. R. Proodnikov, 5 (?) 'kills'	n.a.	
32nd IAD, Naval Aviation/Pacific Fleet					
224th IAP	September 1952/ July 1953	33 'kills' (1 F-84, 32 F-86s), + 9 damaged (F-86s)	Capt. Grigoriy N. Berelidze, 5 F-86 'kills' + 1 F-86 damaged Capt. B. N. Sis'kov, 5 F-86 'kills' + 1 F-86 damaged	22 aircraft 6 pilots KIA	
535th IAP	September 1952/ July 1953	19 (1 A-26, 4 B-29s, 2 F-84s, 11 F-86s, 1 F-94)	Capt. V. Ootkin, 4 F-86 'kills' + 5 F-86s damaged	16 aircraft 5 pilots KIA	5 of the 'kills' were scored in night intercepts
913th IAP	September 1952/ July 1953	29 (1 F-84, 28 F-86s)	Capt. Semyon A. Fedorets, 7 F-86 'kills' + 1 probable 'kill'	20 aircraft 5 pilots KIA	
216th IAD					
518th IAP	March 1952/ July 1953	31 'kills' (1 F-84, 35 F-86s,1 Meteor), + 25 (26) F-86s damaged	Capt. Mikhail I. Mikhin, 9 'kills' (1 F-84, 8 F-86s) + 2 damaged aircraft	19 aircraft 6 pilots KIA	
676th IAP	February 1952/ July 1953	33 (F-86s)	Capt. Yu. A. Vorkov, 4 'kills' + 1 damaged aircraft	14 aircraft 4 pilots KIA	Vorkov was later promoted to Major
878th IAP	February 1952/ July 1953	38 (1 F-80, 4 F-84s, 33 F-86s)	Capt. N. M. Zameskin, 6 F-86 'kills' + 1 damaged aircraft	17 aircraft 6 pilots KIA	
133rd IAD					
147th GvIAP	May 1952/ July 1953	21 'kills' (6 B-29s, 4 F-84s, 10 F-86s,1 F-94) + 5 damaged (2 B-29s, 3 F-86s)	Maj. Nikolay I. Shkodin, 5 'kills' (2 B-29s, 1 F-86 + ?) Capt. Yuriy Dobrovichan, 4 B-29 'kills'	4 aircraft 4 pilots KIA	9 of the unit's pilots scored 'kills'. Shkodin reportedly had 7 'kills'; Shkodin and Dobrovichan are also reported as having 3 'kills' each. 7 'kills' scored in night intercepts, with Dobrovichan as top-scorer
415th IAP	May 1952/ July 1953	28 (6 F-80s, 4 F-84s, 18 F-86s) + 9 damaged (2 F-84s, 7 F-86s)	Capt. V. P. Lepikov, 5 F-86 'kills' (?)	12 aircraft 4 pilots KIA	Unit CO Lt.-Col. P. F. Shavelev also listed as to scorer with 3 'kills' (1 F-84, 2 F-86s)
726th IAP	May 1952/ July 1953	39 (18 F-84s, 21 F-86s) + 15 damaged (3 F-84s, 12 F-86s)	Maj. Nikolay I. Ivanov, 3 F-86 'kills' + 2 damaged and 1 probable 'kill'	12 aircraft 7 pilots KIA	25 of the unit's pilots scored 'kills'
Division unknown					
578th IAP	August 1952/ July 1953	4 F-86 'kills' + 2 more damaged	Capt. V. D. Andryushchenko, 1 F-86 'kill'	10 aircraft 4 pilots KIA	Unit seconded from the Navy/Pacific Fleet
781st IAP	February 1953/ July 1953	11 'kills' (1 F-84, 10 F-86s) + 7 damaged (1 F-84s, 6 F-86s)	Lt. (SG) A. I. Kutsykin, 2 F-86 'kills' + 2 F-86s damaged	9 aircraft 3 pilots KIA	Unit seconded from the Navy/Pacific Fleet
Independent units					
351st IAP	July 1951/ February 1953	10 'kills' (9 B-29s, 1 RB-29) + 3 B-29s damaged + 1 F-94 probable	Maj. Anatoliy M. Karelin, 6 B-29 'kills'	2 aircraft 1 pilot KIFA	Night fighter unit; operated La-11s until the spring of 1952, shooting down 5 A-26s and 2 B-29s before converting to MiGs. Both losses were flying accidents
298th IAP	February-July 1953	4 'kills' (2 F-84s, 2 F-94s) + 6 damaged (1 F3D, 1 A-26, 4 B-29s)	V. I. Shaytov, 1 F-94 Kosenko, 1 F-84 Goncharov, 1 F-94	1 aircraft 1 pilot KIA	Night fighter unit, relieved the 351st IAP. The 298th IAP included a Chinese squadron which scored 1 F-94 'kill'

MiG-15 *sans suffixe* '925 Black', 324th IAD/196th IAP, Antung AB; this was the first *Fagot* flown in Korea by Pepelyayev in April 1951



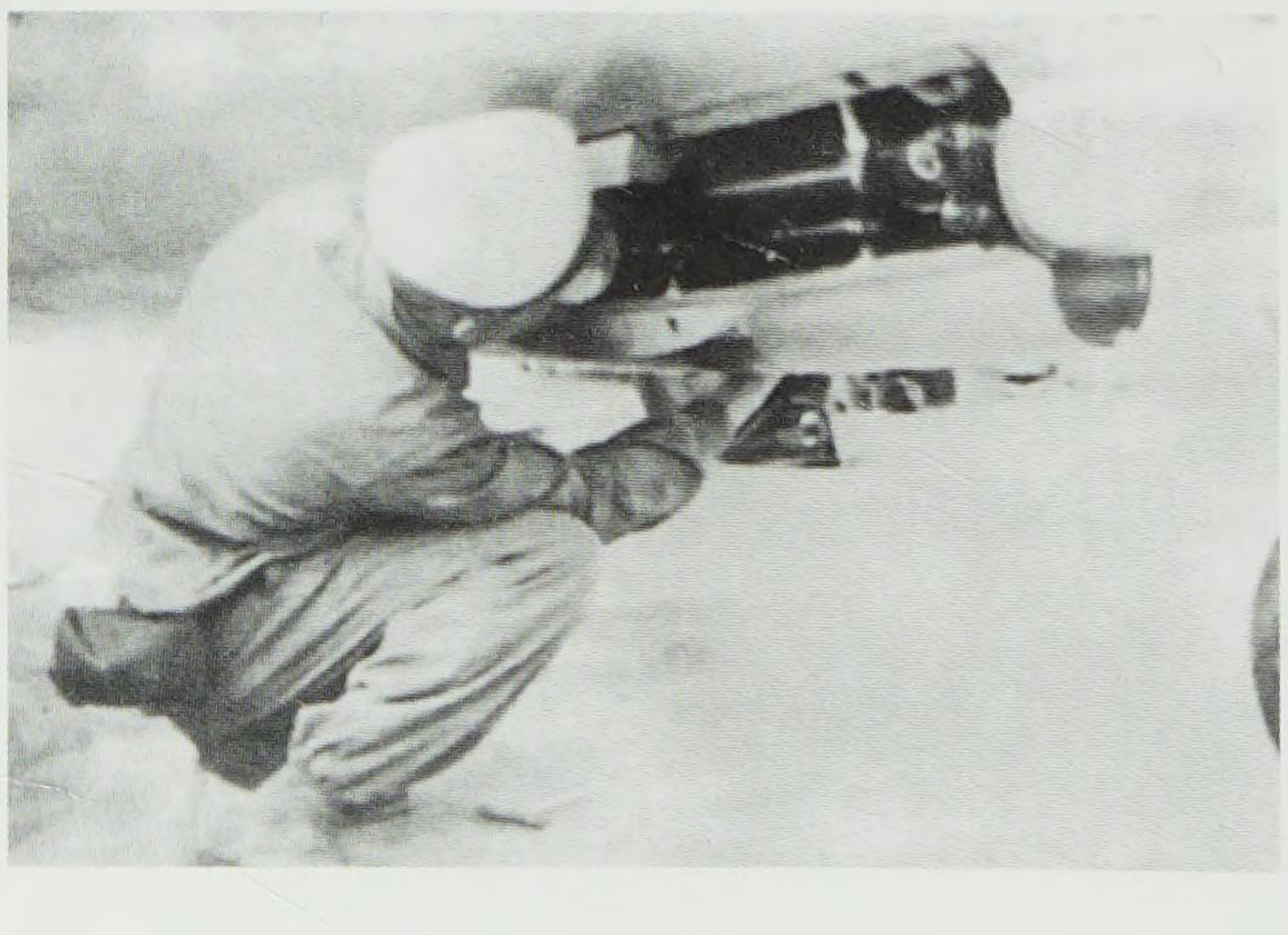
MiG-15*bis* '729 Blue', 324th IAD/176th GvIAP, Antung AB; flown by Capt. Sergey M. Kramarenko (HSU), May 1951/January 1952; shot down by an F-86E on 26th September 1952



redeployed to Xingdao and was assigned the task of training Chinese and Korean jet fighter pilots which joined the fray in the summer of 1951 as the JAA. The 151st GvIAD was also assigned to training Chinese and Korean pilots for a while; in the meantime the 50th IAD was left to shoulder the tasks of the war alone.

Both sides operated under rigid restrictions imposed by the UN on one side and by the Soviet Union's reluctance to expand the conflict (and reveal its involvement) on the other side. UN pilots were prohibited from crossing the Yalu, while the Soviet MiG-15 pilots were ordered to stay behind an imaginary line drawn between Pyongyang and Wonsan in central North Korea. The area between this line and the Yalu River soon became universally known as 'MiG Alley'. Soviet pilots were also prohibited from operating over the sea. These restrictions did not apply to Chinese and North Korean pilots, which could fly pretty much anywhere but suffered heavy losses when Soviet pilots were not close at hand to protect them.

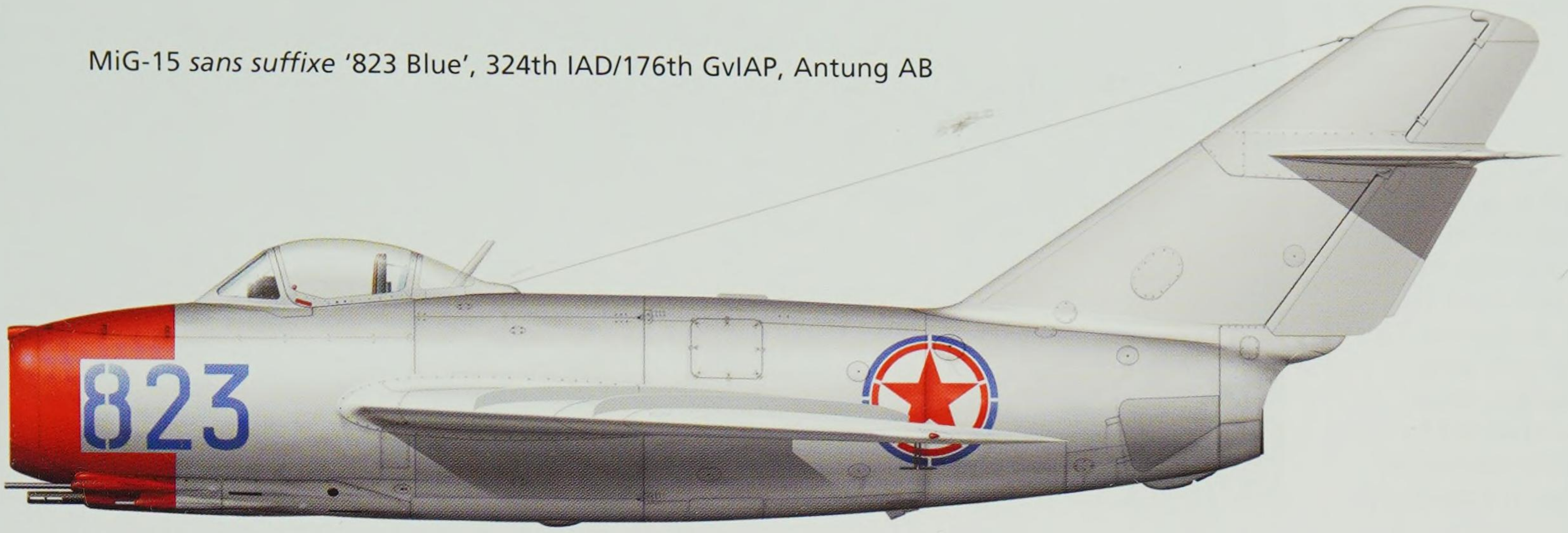
Apart from orders, the 64th IAK's operations were severely restricted by the lack of suitable airfields. Antung AB located in the mouth of the Yalu was the only available base in the forward area until early 1951. Later, it was supplemented by Anshan, Miaogow (also known as Tatung-kao), Dapu and Dagushan; there were other airfields as well, but these



An armourer checks the N-37D cannon of a MiG-15 at Dachang before a sortie.

Routine maintenance of a 29th GvIAP MiG-15 at Dachang.

MiG-15 *sans suffixe* '823 Blue', 324th IAD/176th GvIAP, Antung AB



were occupied by Chinese units. Attempts to use 34 airfields in North Korean territory failed, as these were systematically destroyed by UN bombings as soon as they were rebuilt or at the first sign of MiGs being based there.

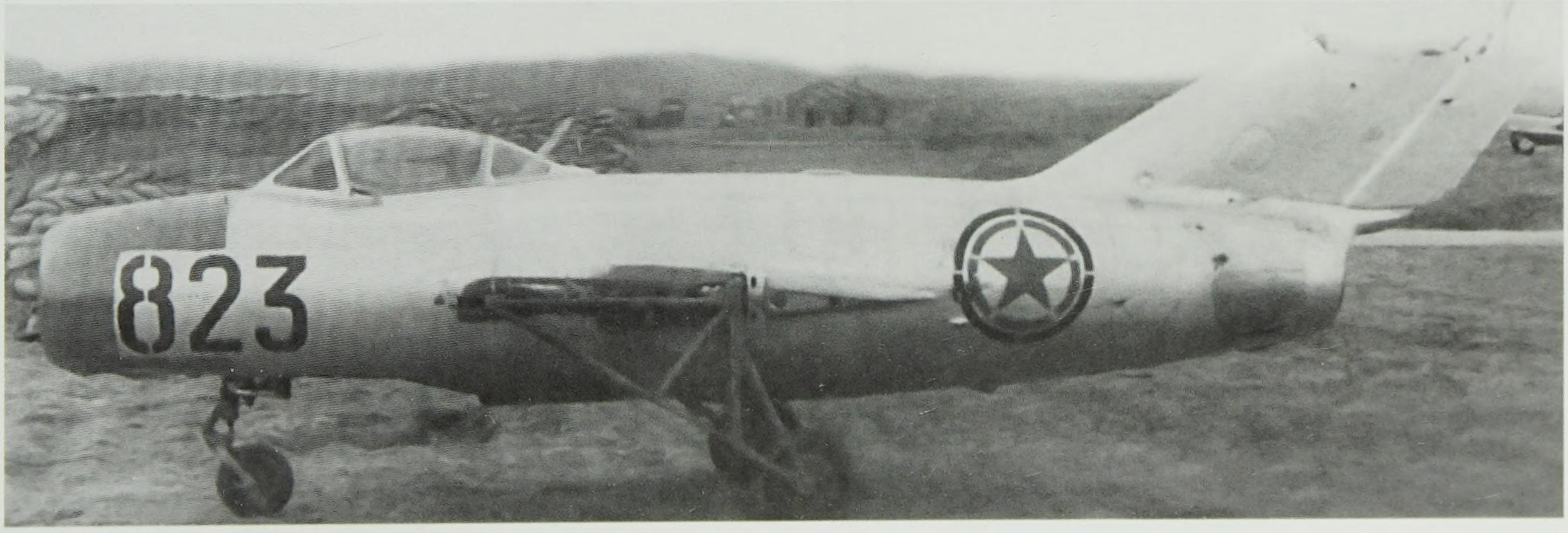
The MiG-15's first encounter with USAF fighters in Korean skies was on 1st November 1950, and its combat tally was opened on that occasion when a 72nd GvIAP MiG-15 shot down a US Air Force North American P-51D Mustang near the Yalu River. The first jet-versus-jet battle in world history took place that same day when four MiG-15s from the same unit engaged a formation of ten Lockheed F-80C Shooting Stars, reportedly shooting down one of them (this 'kill' is unconfirmed).

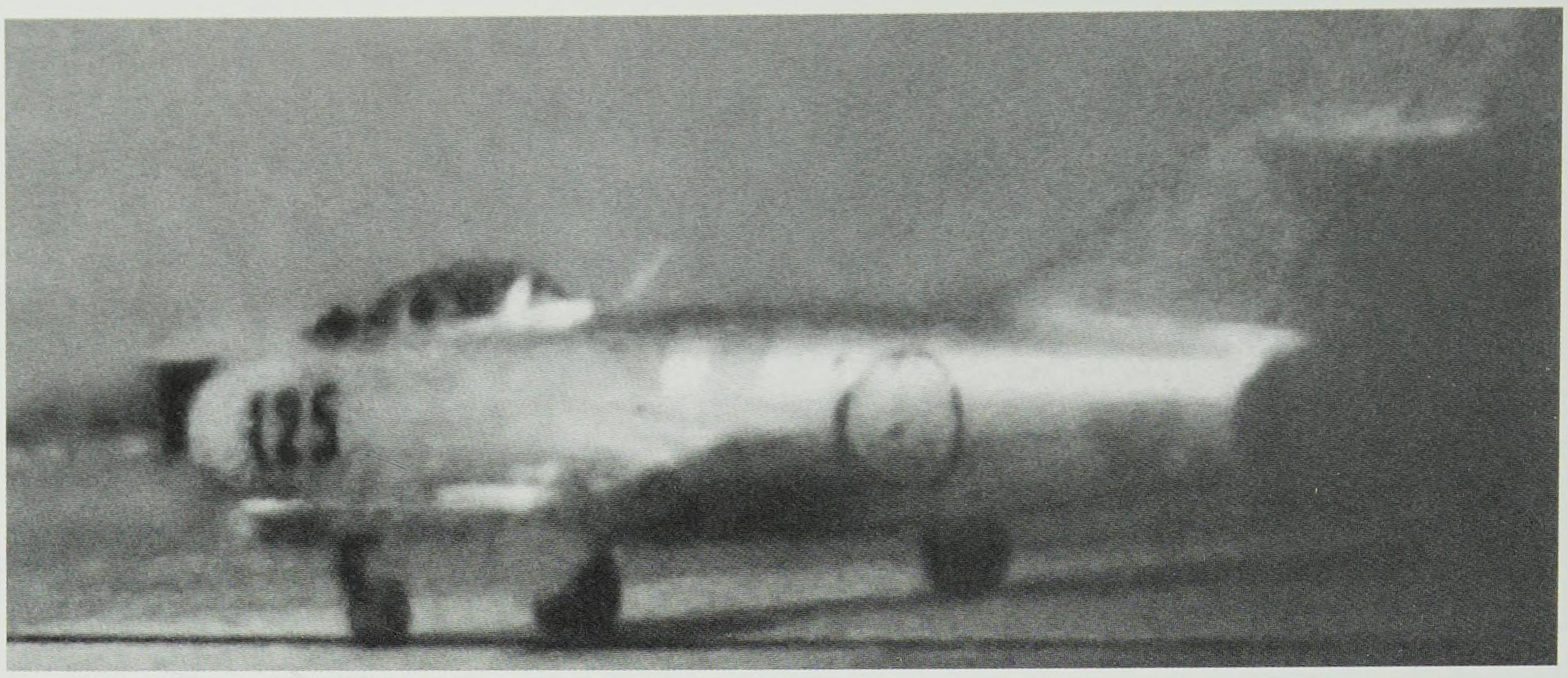
According to Western reports, however, the first jet-versus-jet battle took place a week later, on 8th November. Western accounts of this battle vary, but a 'generic' description is as follows. That day the USAF had planned a major raid against Sinûiju and a bridge on the Yalu River. Prior to the main strike, Mustangs and Shooting Stars attacked North Korean positions on the southern bank of the Yalu, with two flights of 51st Fighter Interceptor Group (FIG)/16th Fighter Interceptor Squadron (FIS) F-80Cs from Kimpo AB flying top cover at 6,000 m (19,685 ft).

Six 29th GvIAP MiG-15s took off from Antung, climbed to 9,000 m (29,530 ft) and engaged one flight of the top cover F-80s. The American pilots turned head on, splitting up the attackers, then dived, trying to lure them down to low altitude where the F-80 could outturn the MiG. One MiG-15 dived after an F-80 and was, in turn, attacked by Lt. Russell J. Brown in F-80C-10-LO 49-0737/'PN-737'. The heavier Shooting Star dived faster and closed in on its quarry, and Brown ripped up the MiG's fuselage with a five-second burst of machine-gun fire. Pieces flew off the MiG and it dived into the ground, trailing smoke.

Yet, Russian aviation historians and VVS records give a totally different picture. Firstly, Western accounts of the famous battle rarely mention the fact that five out of six machine guns on Brown's aircraft jammed. This alone makes the 'kill' very doubtful indeed, since the MiG-15 has exhibited high resistance to 12.7-mm (.50 calibre) bullets; Sabre pilots sometimes reported that 'the MiG absorbed the

823 Blue, a 324th IAD/176th GvIAP MiG-15, dismantled for repairs at Antung after being damaged in combat on 12th April 1951. The aircraft sits on a special 'beaching gear', as the main gear units are gone with the wings. Most MiGs damaged in combat over Korea were quickly restored to active status.





125 Blue, a 324th IAD/176th GvIAP/ Sqn 2 MiG-15 flown by Lt (SG) A. P. Gogolev. The fighter's nose appears to be painted red for quick identification in a dogfight.

entire ammo supply and still got away'. While the 'entire ammo supply' statement seems a bit exaggerated, it was certainly hard to shoot down a MiG-15 with just one Browning.

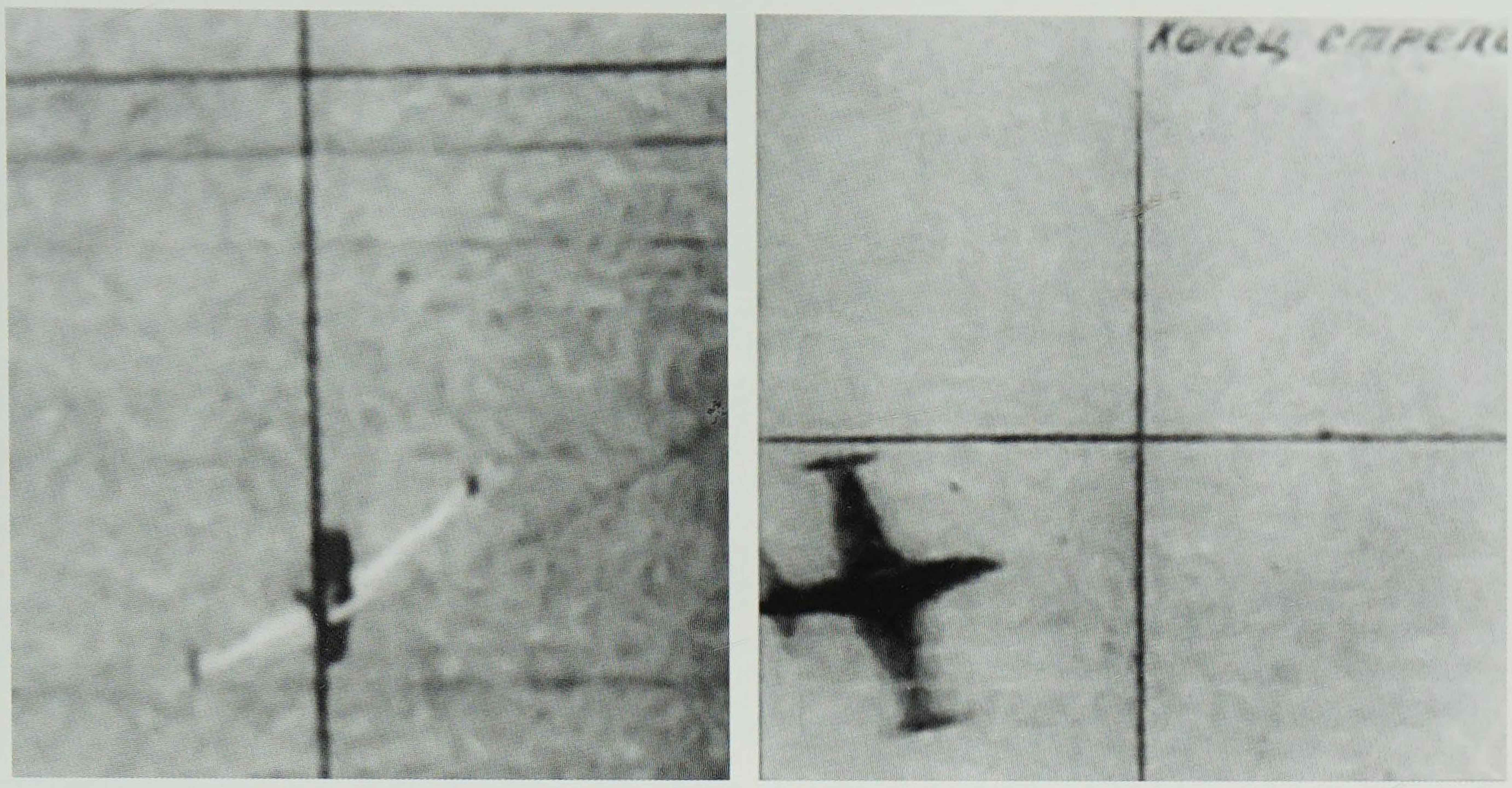
Secondly, Soviet military archives show that no Soviet aircraft were lost on 8th November 1950. Since Soviet units were the only ones operating against UN aviation at the time, Lt. Brown could not possibly have shot down a Chinese or North Korean pilot, which means he did not shoot down *anyone at all*.

Still, Brown *had* reasons to believe that he had scored a 'kill'. The most probable explanation is this. When the MiG pilot Lt. (SG) Kharitonov realised he was under attack, he jettisoned his drop tanks and made for home at low altitude (according to some sources, Kharitonov's aircraft took a hit but landed safely at Antung). Now the first thing a fighter pilot does before entering a dogfight is dump his drop tanks. However, Soviet pilots in Korea started doing so only a week or two after they joined the action – simply because drop tanks were scarce at first and the pilots were reluctant to jettison them. Brown probably did not expect his adversary to begin a dogfight with the drop tanks still in place; when the tanks fell away, Brown must have decided the MiG had disintegrated in mid-air.

The first confirmed jet-versus-jet 'kill' took place on 9th November 1950. Eighteen 139th GvIAP *Fagot-As* attacked a group of 20 US Navy Vought F4U-4 Corsairs and Douglas AD-1 Skyraiders bombing a bridge across the Yalu River near Sinûiju. They were immediately pounced upon by the escorting two flights of Grumman F9F-2 Panthers which were ideally positioned for attack. According to Soviet sources, in the ensuing battle the MiGs destroyed six strike aircraft, losing one of their own.

That same day the MiG-15 pilots claimed their first 'kills' against Boeing B-29 Superfortress bombers. The heavy bombers were considered priority targets, since they inflicted heavy damage on North Korean and

Lt (SG) A. A. Svintitskiy poses in the cockpit of his MiG-15 at Miaogow on 7th July 1951. A short while earlier he had shot down an F-86 in a head-on attack. The serial appears to be 905 Red.

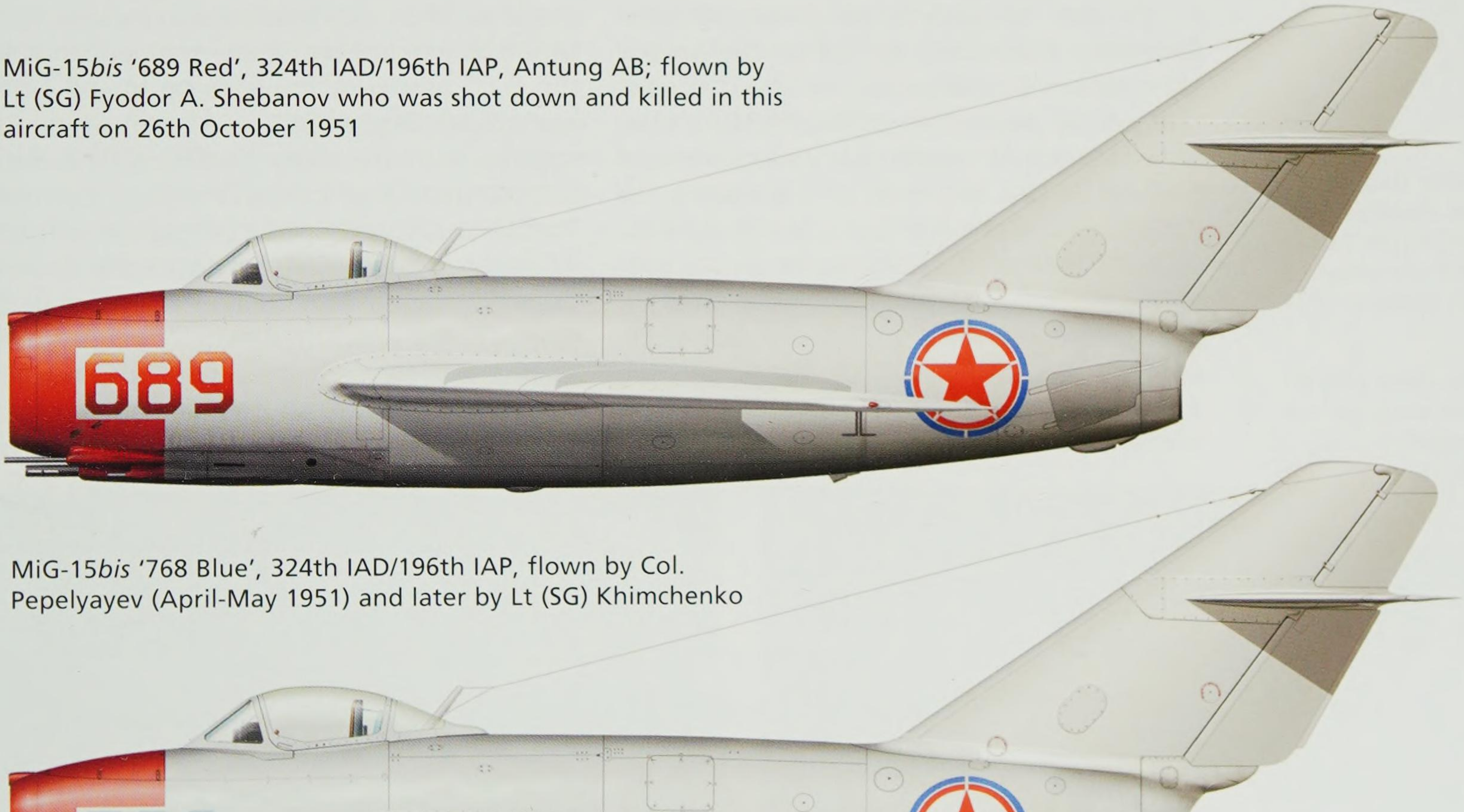


Two shots of an F-80A through the gunsight of a MiG-15.

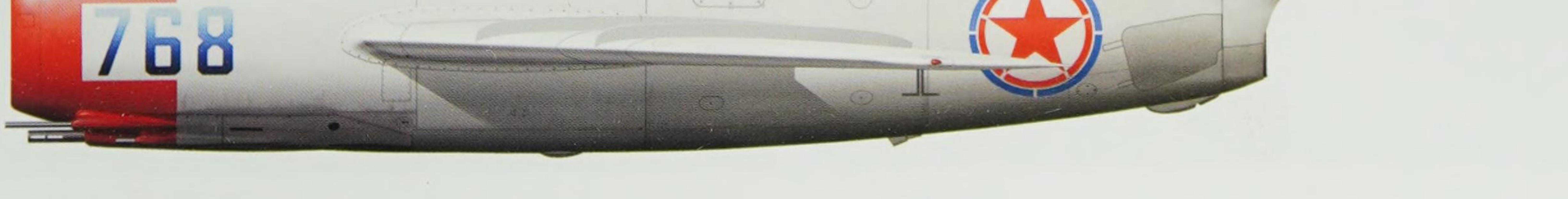
Chinese ground troops. On 9th November Lt. (SG) N. I. Podgornyy (67th IAP) and Capt. A. Z. Borodoon (72nd GvIAP) shot down one B-29 each; Podgornyy also damaged RB-29A-50-BN 44-61813 of the 31st Strategic Reconnaissance Squadron but had to disengage when his fighter was hit and the oxygen system damaged. Still, the attack had been successful – the RB-29 crash-landed at Johnson AB, Japan. (According to US sources, the MiG-15 first met the Superfortress on 4th November when four MiGs attacked and damaged an RB-29.) The MiG-15's cannons proved deadly for the B-29 and could literally rip a wing off the bomber; conversely, the B-29's defensive armament of 12.7-mm (.50 calibre) Browning machine-guns was of little use against the MiGs.

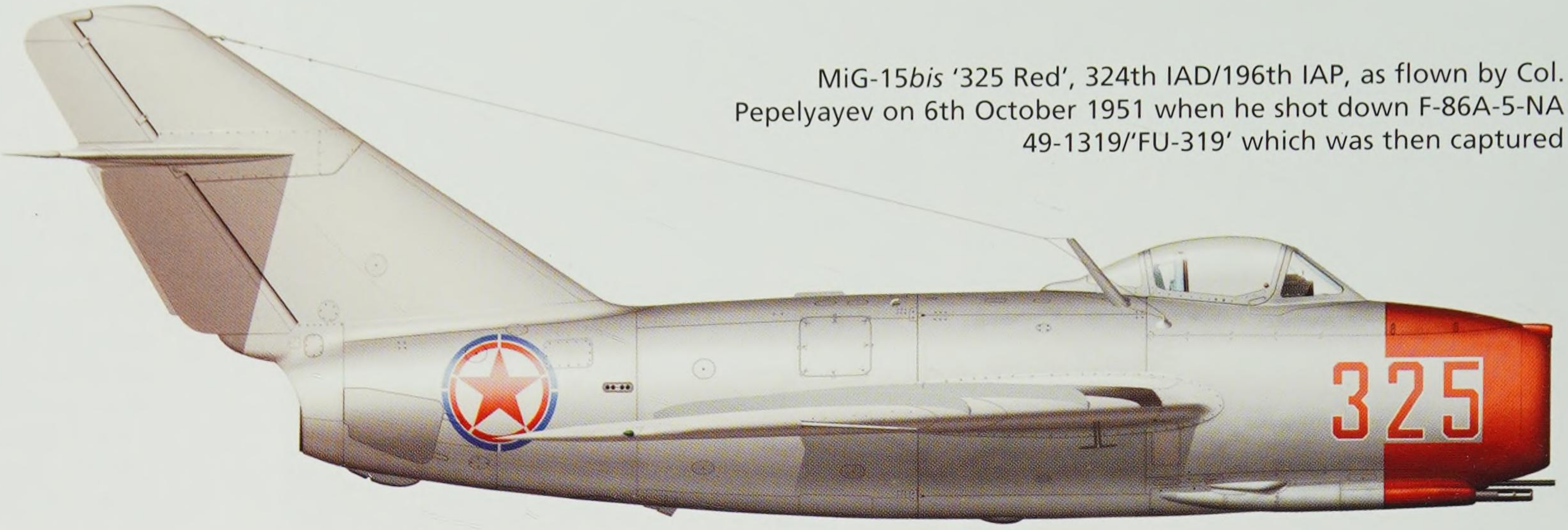
Originally Soviet pilots were up against propeller-driven aircraft or early straight-wing jets such as the F-80C and the Republic F-84E/G Thunderjet, which were no match for the

MiG-15*bis* '689 Red', 324th IAD/196th IAP, Antung AB; flown by Lt (SG) Fyodor A. Shebanov who was shot down and killed in this aircraft on 26th October 1951



MiG-15*bis* '768 Blue', 324th IAD/196th IAP, flown by Col. Pepelyayev (April-May 1951) and later by Lt (SG) Khimchenko





MiG-15*bis* '325 Red', 324th IAD/196th IAP, as flown by Col. Pepelyayev on 6th October 1951 when he shot down F-86A-5-NA 49-1319/'FU-319' which was then captured

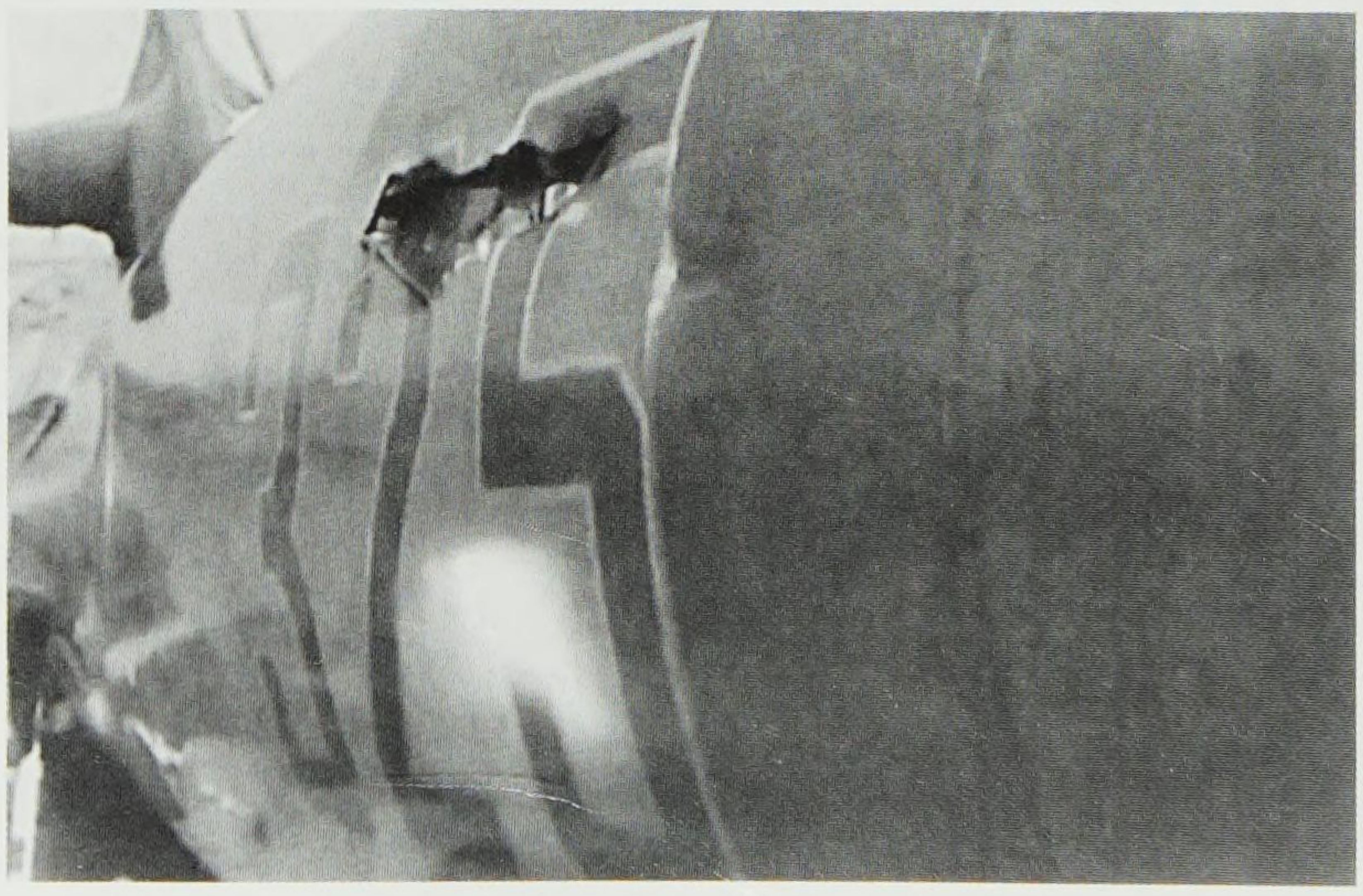
MiG-15. The first encounter with the F-84 was on 21st January 1951; a flight of four Thunderjets attempting to bomb a bridge on the Hangan River was intercepted by six 177th IAP MiG-15s which destroyed two of them.

Soon, however, the heavy losses inflicted by MiGs caused the USAF to hasten the delivery of the brand-new swept-wing North American F-86A Sabre to the Korean TO, and things began to change. The first battle between the F-86A (4th FIG/336th FIS) and MiG-15 (29th GvIAP) took place on 17th December 1950; the Sabre emerged as the winner that day.

The first 'big day' for UN pilots was 22nd December 1950 when the Sabres had several skirmishes with 50th IAD MiGs. The sides claimed the destruction of five F-86As and six MiG-15s; actual losses were one Sabre and two MiGs. By the end of December the Americans claimed eight MiG-15s shot down, with the loss of only one Sabre in 76 dogfights. While these figures are grossly exaggerated (only three MiGs were really destroyed), consider this. According to Soviet sources, MiG-15 units lost three aircraft in the six weeks before the Sabre came on the scene – and just as many in two weeks after that. The F-86 certainly did change the situation in Korean skies.

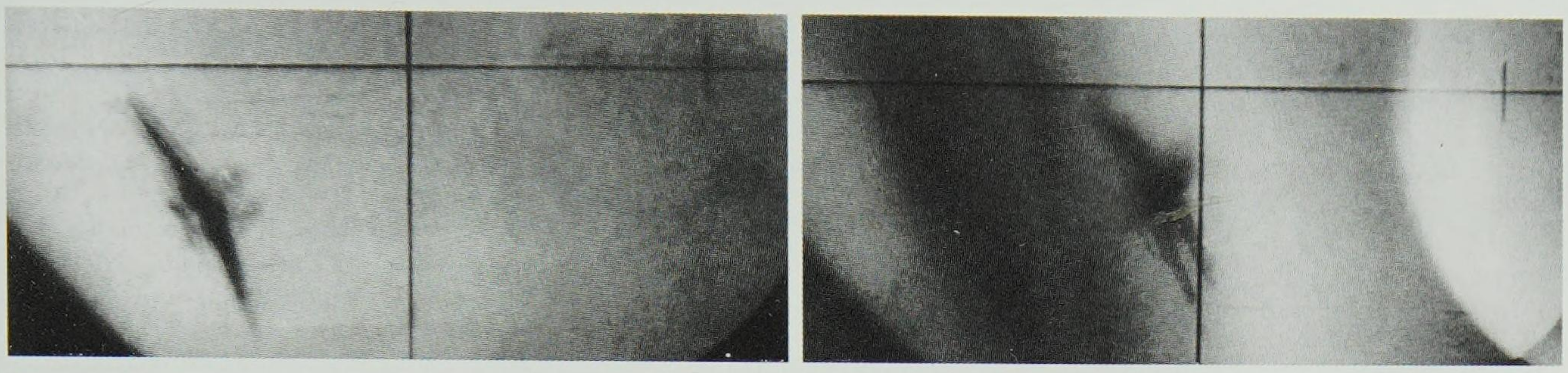
The improved MiG-15*bis* came to Korea almost concurrently with the basic MiG-15 *sans suffixe*; the 50th IAD was the first unit to fly it. 29th GvIAP *Fagot-Bs* flew their first sorties in the war on 30th November from Anshan AB and had their first dogfight the next day. Other Soviet units which came to Korea flying the *Fagot-A* quickly converted to *bises*, passing their old aircraft on to 'Unionside' divisions or to JAA units.

The 324th IAD commanded by the famous ace Col. Ivan N. Kozhedoob initially flew MiG-15s *sans suffixe*; these were superior to the F-80 and F-84 but inferior to the F-86. Immediately the pilots started voicing their discontent with the older hardware. The 64th IAK command had to heed the pilots' opinion. The 324th IAD swapped its *Fagot-As* with the 47 *Fagot-Bs* of the 151st GvIAD – the division previously based at Antung. These were well-worn aircraft which had seen action in Korea since late December 1950, but in late May 1951 the 324th IAD started taking delivery of brand-new *bises*.

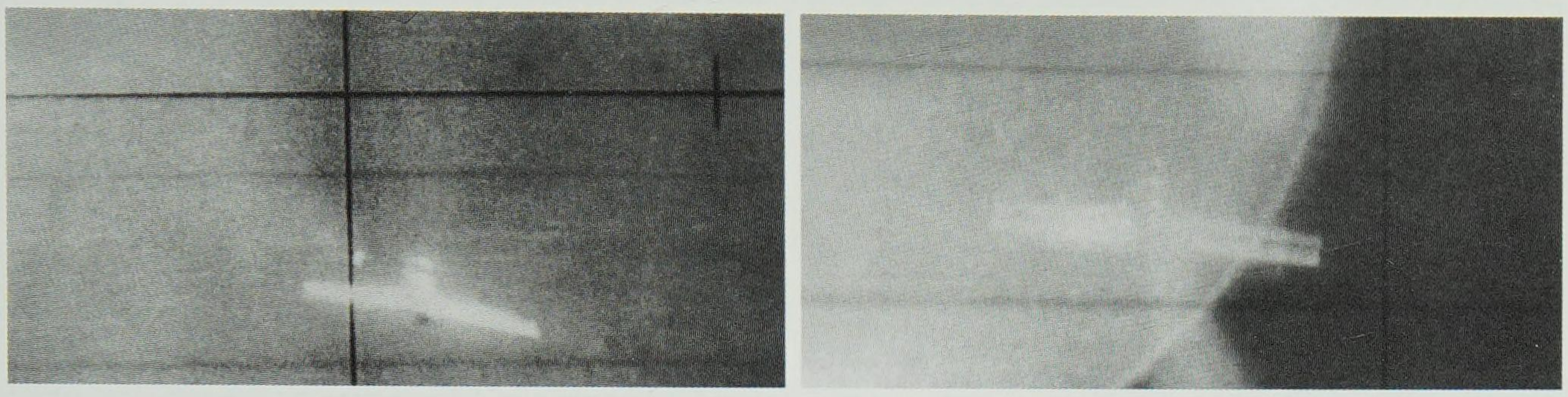


Battle damage to Col. Pepelyayev's MiG-15*bis* '325 Red' sustained on 6th October 1951.

The same aircraft following on-site repairs.



Gun camera footage of Col. Yegveniy Pepelyayev's famous shoot-down of F-86A-5-NA 49-1319 on 6th October 1951.



Here, Pepelyayev downs another 4th FIW F-86 in MiG-15*bis* '325 Red' on 28th November 1951.

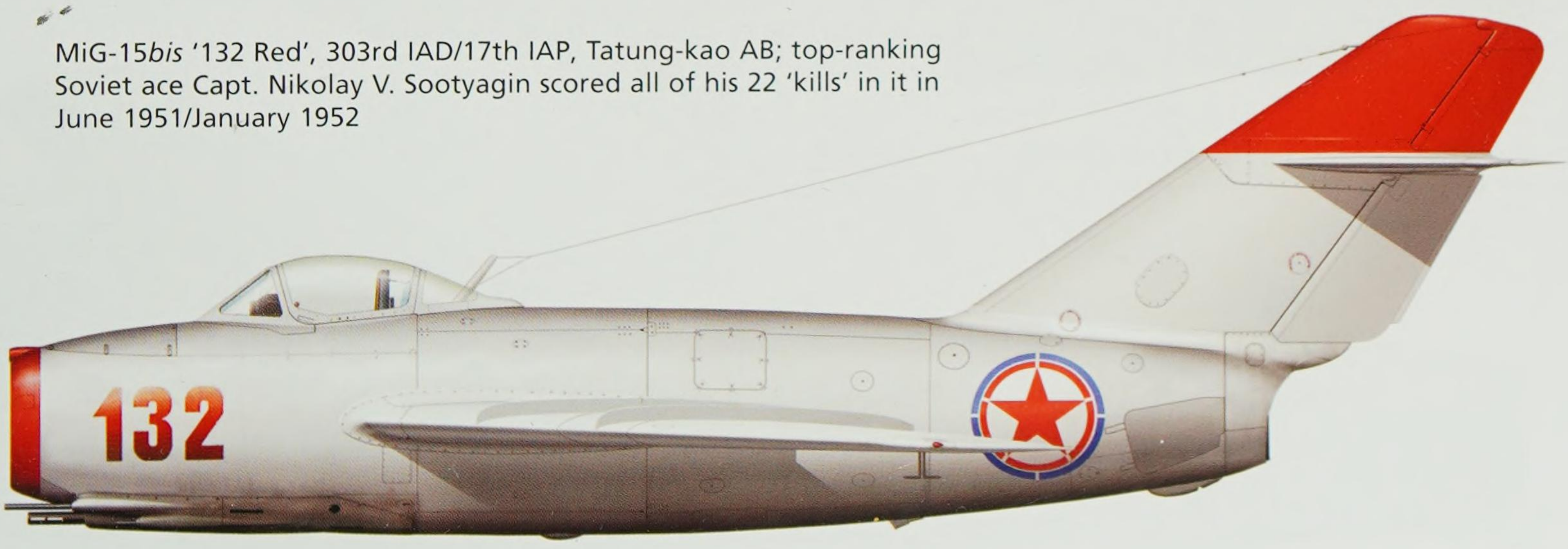
The USAF noted little MiG activity in January-April 1951. Consequently the F-86s were shifted to strike duties, supporting UN ground troops. The explanation is this. The first group of Soviet pilots in Korea still had little combat experience in the MiG-15, and individual pilot training often needed improvement. The P-51s and F-80s were easy meat, but the F-86 was a far more formidable adversary. Hence, knowing their tactical disadvantage, MiG-15 pilots often turned tail when confronted by Sabres. Still, it should be remembered that the main objective of Soviet fighter units was to neutralise USAF bombers; from this point of view, avoiding combat with the F-86 can be justified.

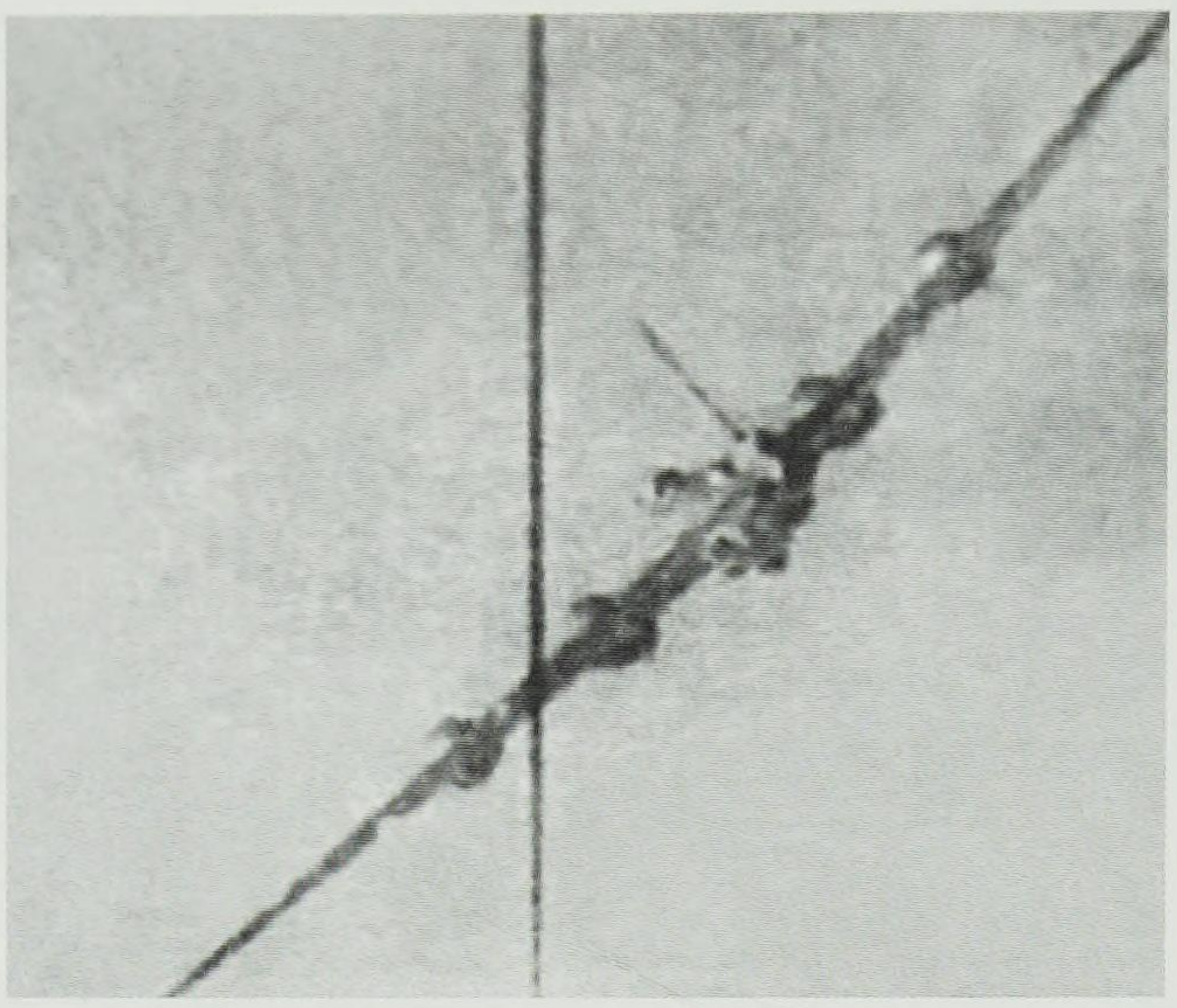
Stage One of MiG-15 operations in Korea ended when the first group of Soviet pilots returned to the USSR as a unit in April 1951. This first stage had been very difficult, as testified by the fact that Soviet pilots were honoured with the Hero of the Soviet Union (HSU) title, the top Soviet military award, after destroying just three or four enemy aircraft. The Order of Lenin, or alternatively the Order of the Red Banner of Combat, was given merely for flying a certain number of sorties. However, because this first group gained combat experience at a great cost, pilots who replaced them had it easier. And the newer pilots were better trained, going to Korea as volunteers with no illusions, prepared to confront an experienced and well-equipped opponent.

The Soviets rotated whole units into and out of combat at once. This approach had an inherent flaw; newcomers went into battle without experienced colleagues beside them and 'stepped on the same rake' (from a Russian joke about repeatedly making the same mistakes). Pilots who completed a tour of duty could pass along their experience to newcomers only orally. There was a decline of MiG activity after each turnaround of pilots, and one consequence was increased losses.

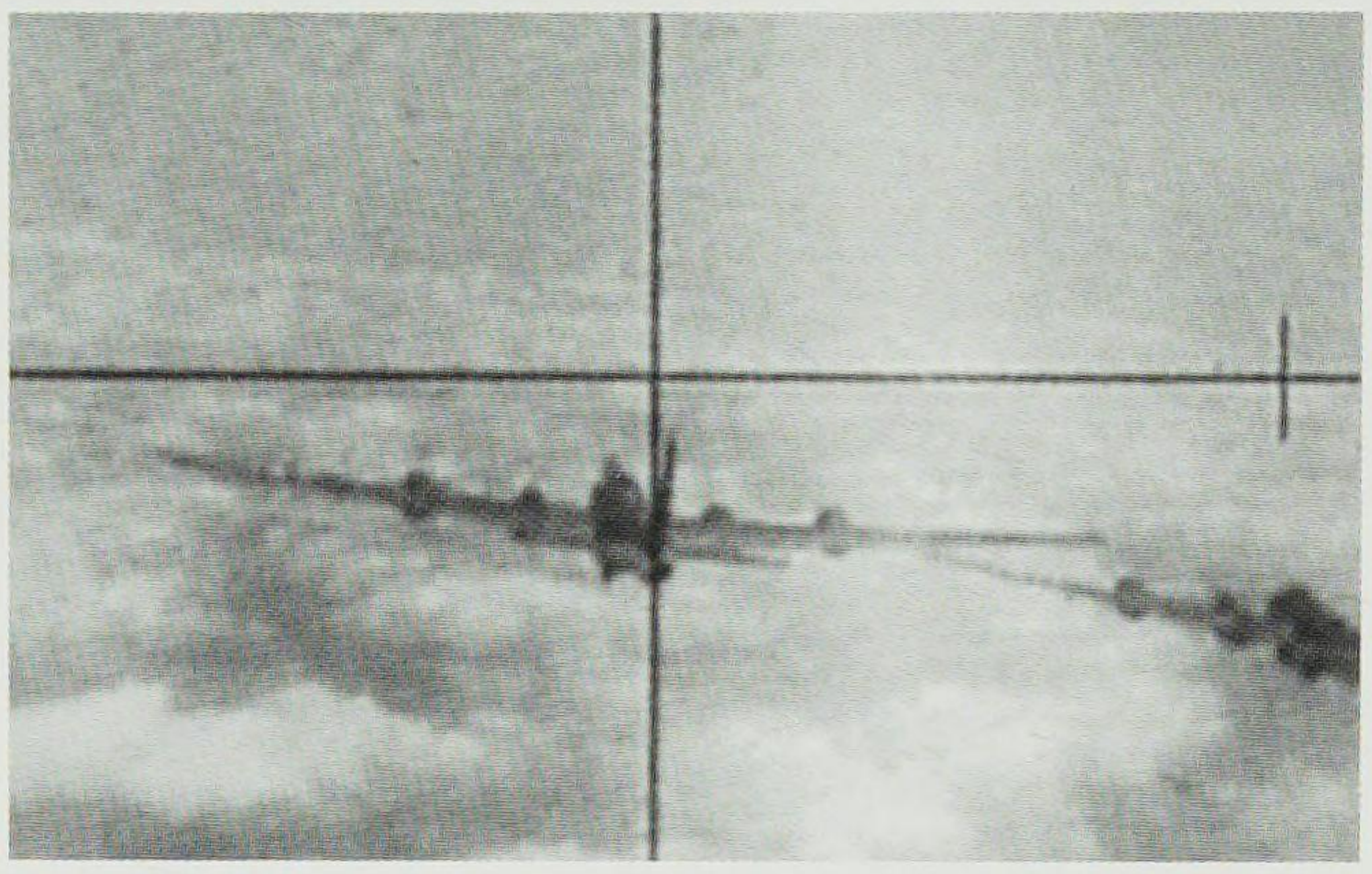
This rotation scheme typifies the way Soviet leaders, military and civil, approached any activity. If something did not succeed,

MiG-15*bis* '132 Red', 303rd IAD/17th IAP, Tatung-kao AB; top-ranking Soviet ace Capt. Nikolay V. Sootyagin scored all of his 22 'kills' in it in June 1951/January 1952





An excellent gun camera shot of a B-29 in the sights of Col. Aleksandr P. Smorchkov.



Another B-29 under attack by Capt. Ivan V. Soochkov (324th IAD/176th GvIAP).

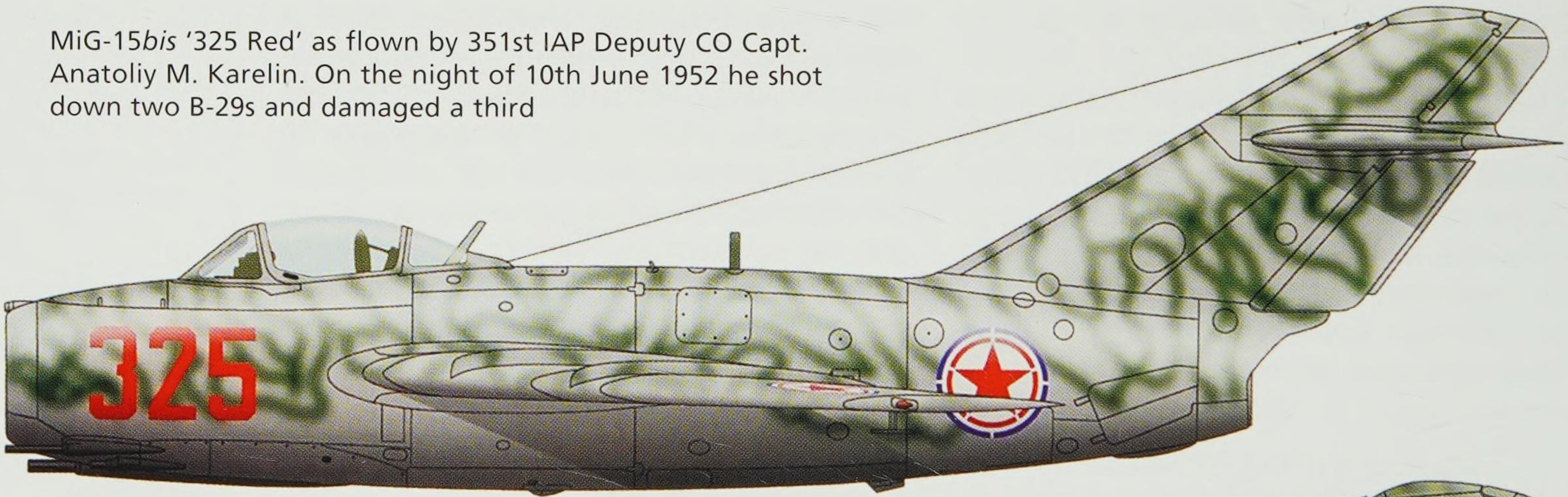
shallow decisions, often not touching the cause of the problem, were usually taken. If F-86s won a battle against MiG-15s, Soviet pilots and commanders were blamed and replaced. The Americans, in contrast, rotated individuals, not squadrons; experienced 'high-timers' coached newcomers and protected them during missions.

Stage Two of the air war was characterised by a major Communist offensive (Chinese troops advanced south as far as Seoul and recaptured it) and hence intensified bombing by the USAF. The second group of Soviet pilots sent to Korea at this stage was selected more carefully than the first. It was formed in the autumn of 1950 and started toward Manchuria in November. The 324th IAD was staffed with experienced pilots who had a lot of jet flying time; many of them were Great Patriotic War veterans. The division's 176th GvIAP redeployed to Antung AB on 1st April 1951, the 196th IAP following a day later.

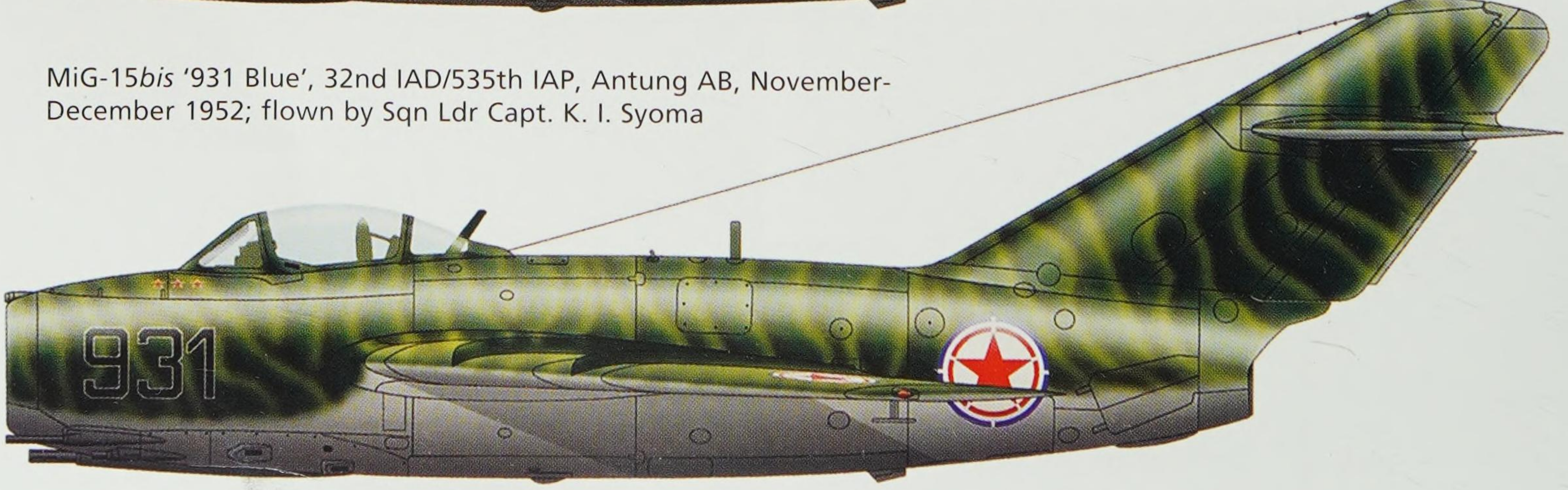
The 303rd IAD under Maj.-Gen. Gheorgiy A. Lobov, HSU (succeeded by Col. Aleksandr Koomanichkin when Lobov was promoted to 64th IAK Commander) was formed at the same time. It comprised the 18th GvIAP, the 17th IAP and the 523rd IAP. The 18th GvIAP was committed to action in early May, initially operating from Antung; in mid-June the other two regiments started flying from the new airfield at Miaogow (other sources state Manpo).

Now the domination of American air power in Korea was reversed; the MiGs seized

MiG-15*bis* '325 Red' as flown by 351st IAP Deputy CO Capt. Anatoliy M. Karelin. On the night of 10th June 1952 he shot down two B-29s and damaged a third



MiG-15*bis* '931 Blue', 32nd IAD/535th IAP, Antung AB, November-December 1952; flown by Sqn Ldr Capt. K. I. Syoma

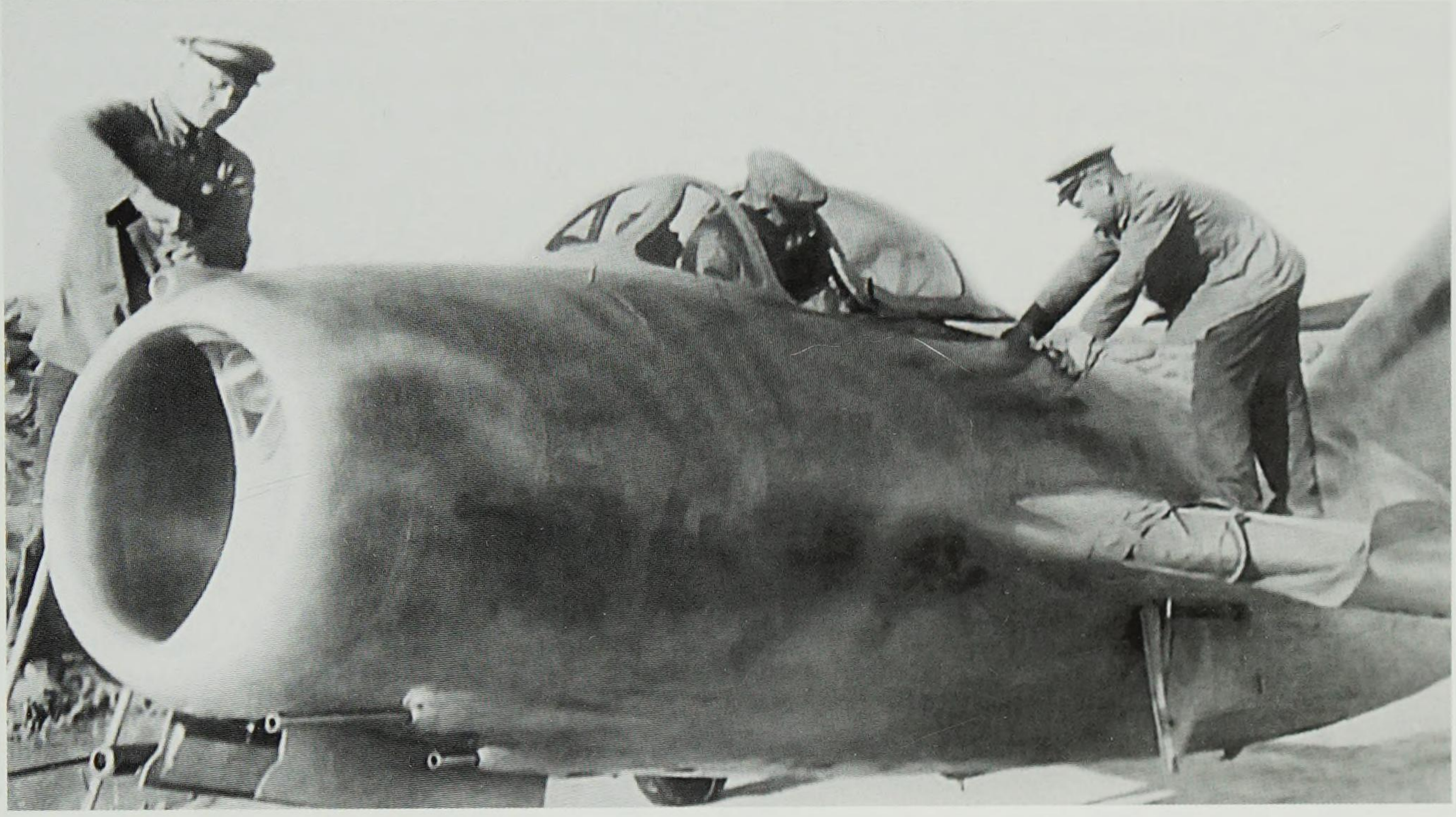


air superiority over the Yalu River area. Each time UN aircraft entered that area, they suffered heavy losses.

True, the new group also learned a few things the hard way; the 176th GvIAP lost three aircraft on its very first sortie. The 196th IAP commanded by Col. Yevgeniy G. Pepelyaev was more lucky, losing no aircraft or pilots in its first skirmishes but also claiming no 'kills' initially. Pepelyaev coached his pilots harshly, so the old Russian motto 'tough in training, easy in combat' was true for them.

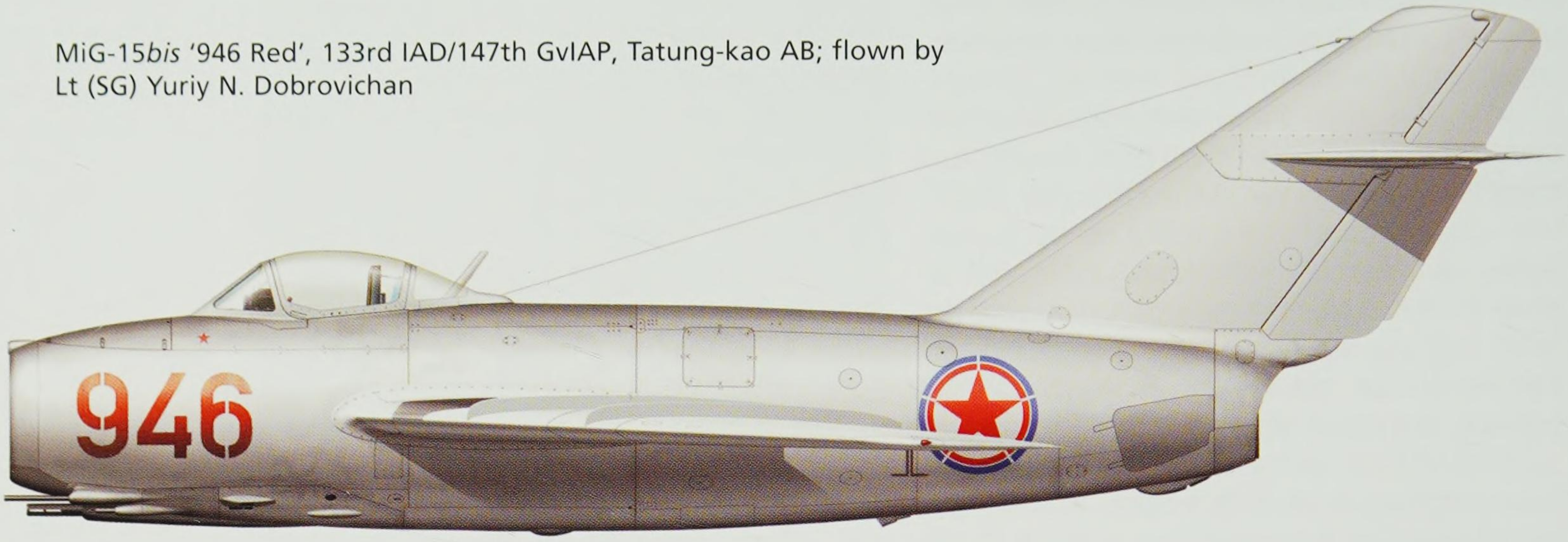
The biggest achievement made by the Soviet fighter units during Stage Two of the war was the cessation the of the B-29 bombers' daytime activity. The Superfortresses suffered their first major defeat on 12th April 1951 when the 19th, 98th and 307th Bomber Groups (Heavy) – 40 aircraft in all – attacked the bridge at Sinûiju, escorted by F-84Es and F-86s. The MiGs attacked in two waves, the first one numbering some 50 aircraft and the second one 20. As a result, three B-29s were destroyed and five more badly damaged, and on General George E. Stratemeyer's orders all further B-29 raids in the Sinûiju area were called off until some really effective means of protecting the bombers could be found.

Six months later, on 30th October 1951– a day which came to be known as Black Tuesday, – came a battle which completely



The serial almost obliterated by crude green camouflage, 351st IAP MiG-15*bis* '546 Red' is prepared for a sortie at Antung AB in the autumn of 1952. Note the canvas draped over the wing to avoid damaging the paint.

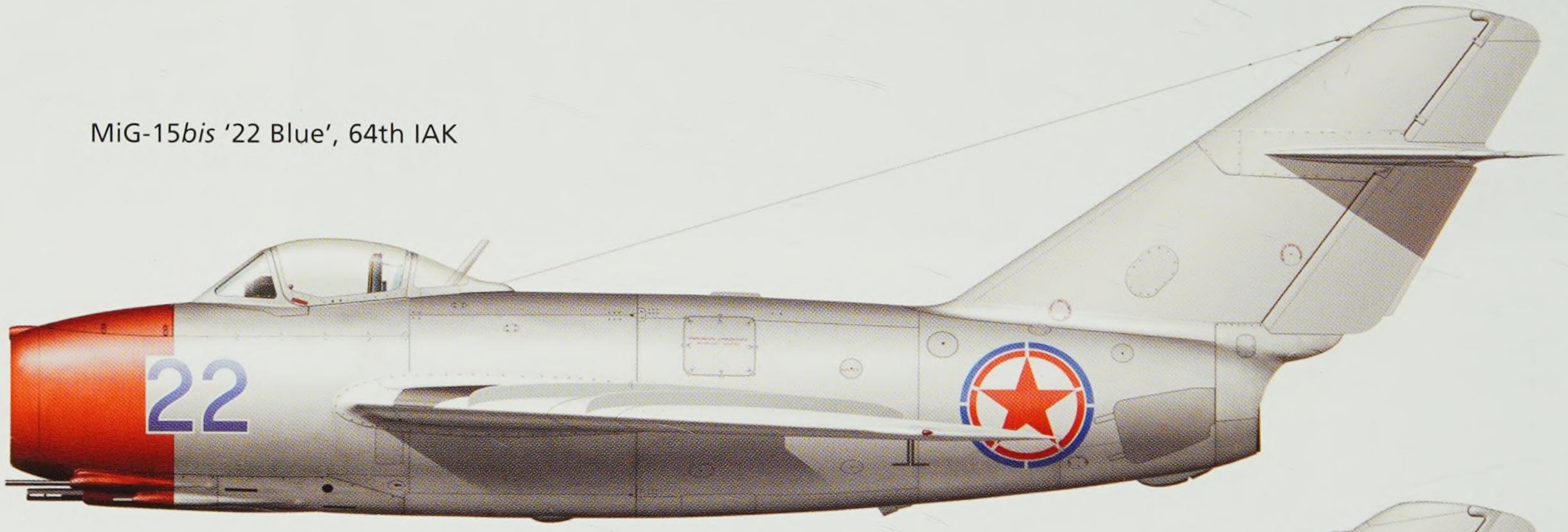
Capt. I. P. Golyshevskiy poses in the cockpit of '546 Red'.



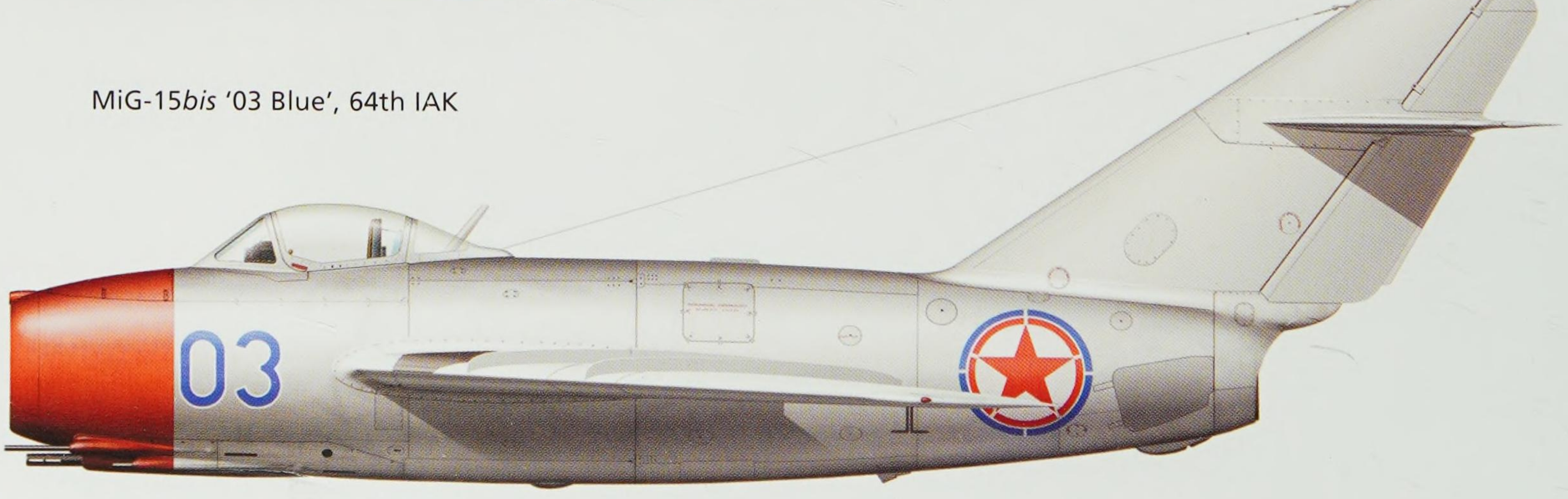
MiG-15*bis* '946 Red', 133rd IAD/147th GvIAP, Tatung-kao AB; flown by Lt (SG) Yuriy N. Dobrovichan

changed B-29 operations in Korea. A large formation of 307th BG(H) B-29s escorted by nearly 200 fighters made for Namsi AB in the heart of 'MiG Alley'. Forty-four 303rd IAD and 324th IAD MiG-15s scrambled to intercept; the pilots were ordered to go for the bombers and not to tangle with the fighters if at all possible. Once again, the MiGs dived through the escorting fighters, causing them to take violent evasive action, and attacked the bombers.

According to Maj.-Gen. Gheorgiy A. Lobov, the Soviet pilots destroyed twelve B-29s and four Thunderjets for the loss of only a single MiG-15. (A more recent Russian publication says ten B-29s and no MiGs were shot down!) Also, many of the remaining Superfortresses were damaged, with casualties in almost every crew. (American records show that three B-29s were lost and four more damaged; also, only one F-84 is listed as lost. Two MiG-15s were claimed as shot down by the F-86s flying top cover, one more by the F-84s providing close escort, and three more by the B-29 gunners.)



MiG-15*bis* '22 Blue', 64th IAK

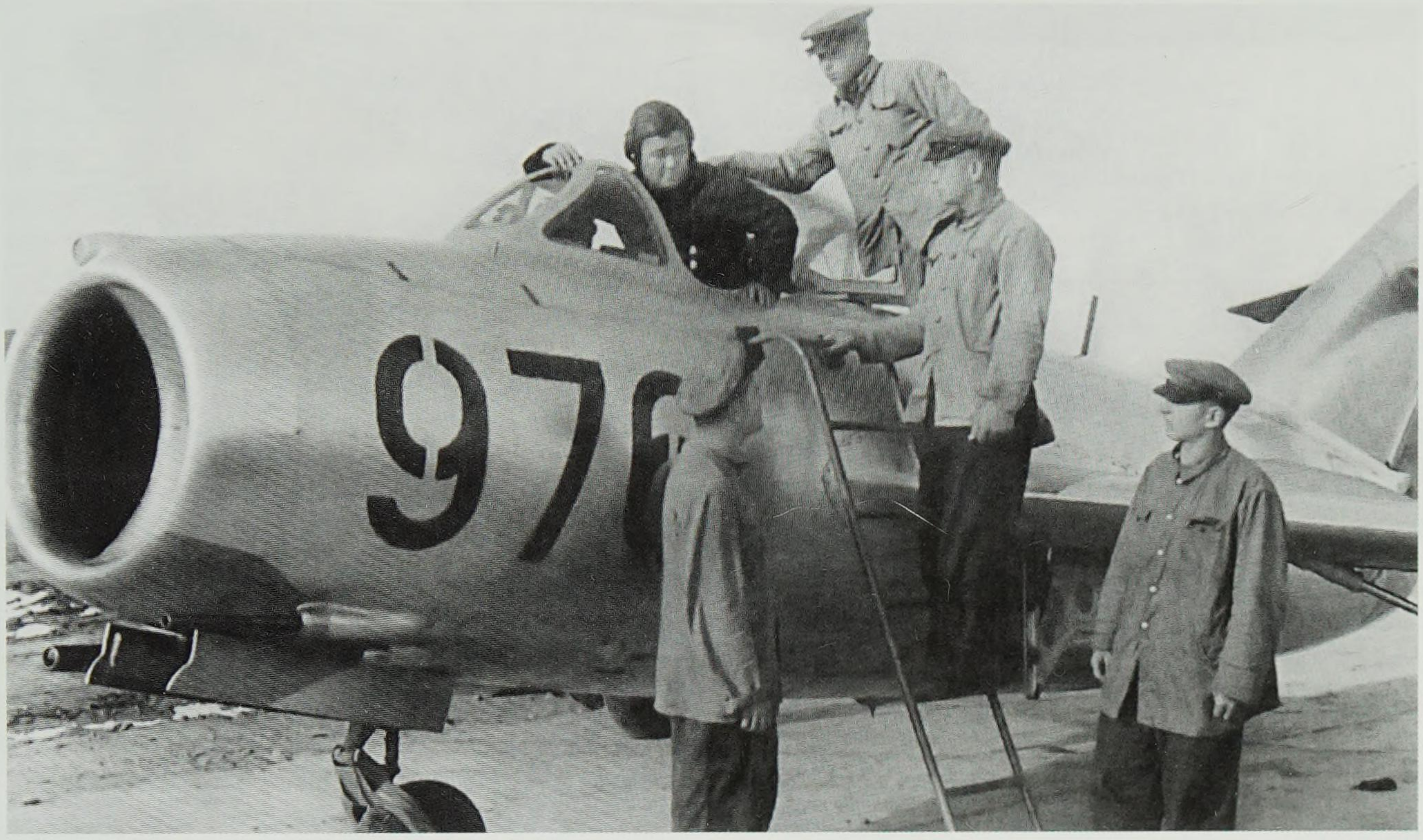


MiG-15*bis* '03 Blue', 64th IAK

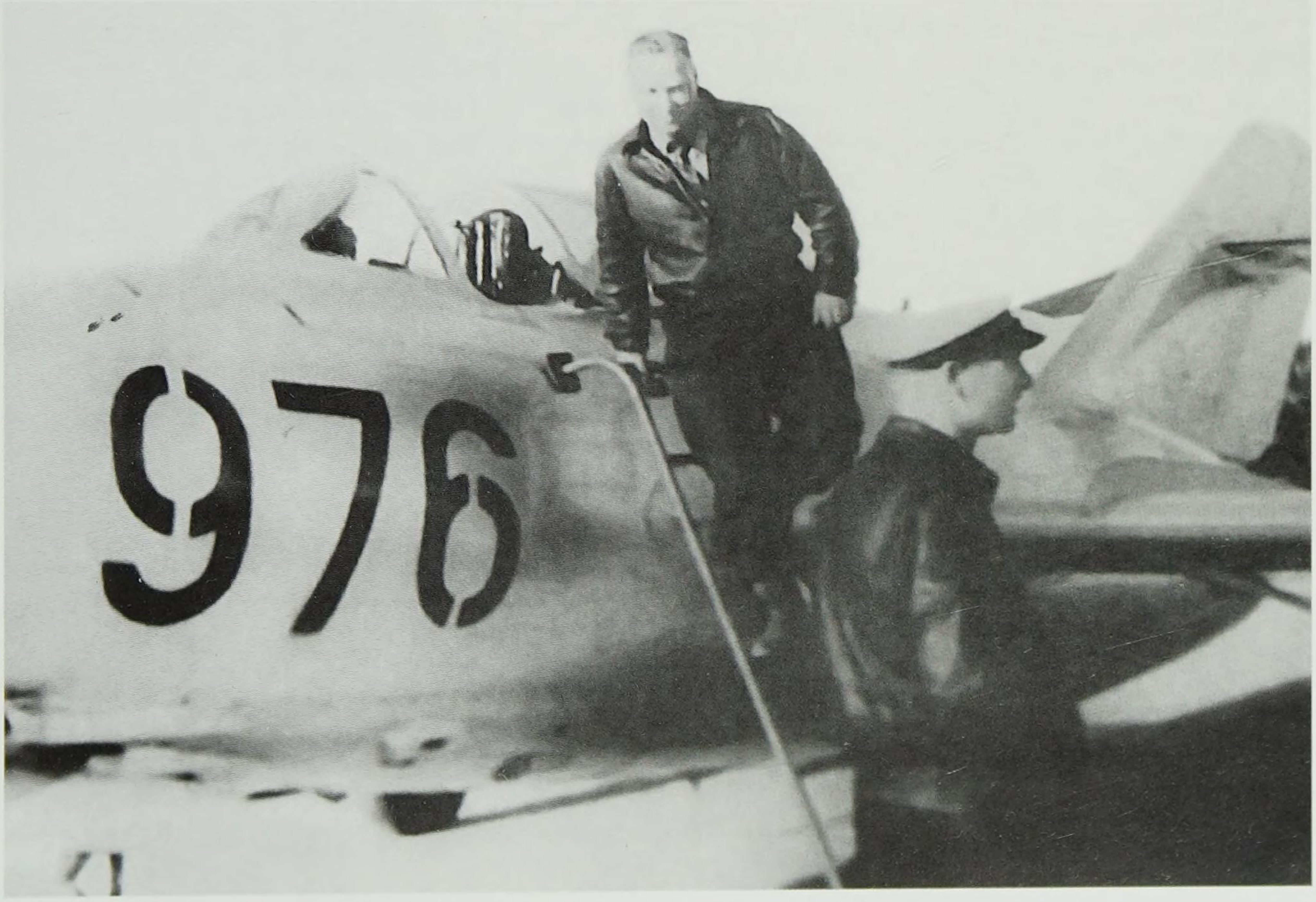
The shock caused by the Black Tuesday was so great that not a single USAF aircraft appeared in 'MiG Alley' for the next three days. A month later three B-29s attempted a daytime raid on the bridges across the Yalu, but all three were shot down by MiGs. From then on the Superfortresses became strictly nocturnal.

Also during the second stage of the air war, Soviet fighter units encountered an adversary other than USAF aircraft – namely Royal Australian Air Force (77 Sqn) Gloster Meteor F.8s. The MiG-15 first met the Meteor in mid-August 1951. The first battle between the Meteors and 303rd IAD/17th IAP MiGs took place soon after this first sighting, on 25th August. Generally the Meteors didn't stand much of a chance against the MiGs; by 3rd November 1951, 303rd IAD pilots had destroyed 18 of them, after which the 324th IAD picked up where the 303rd had left off.

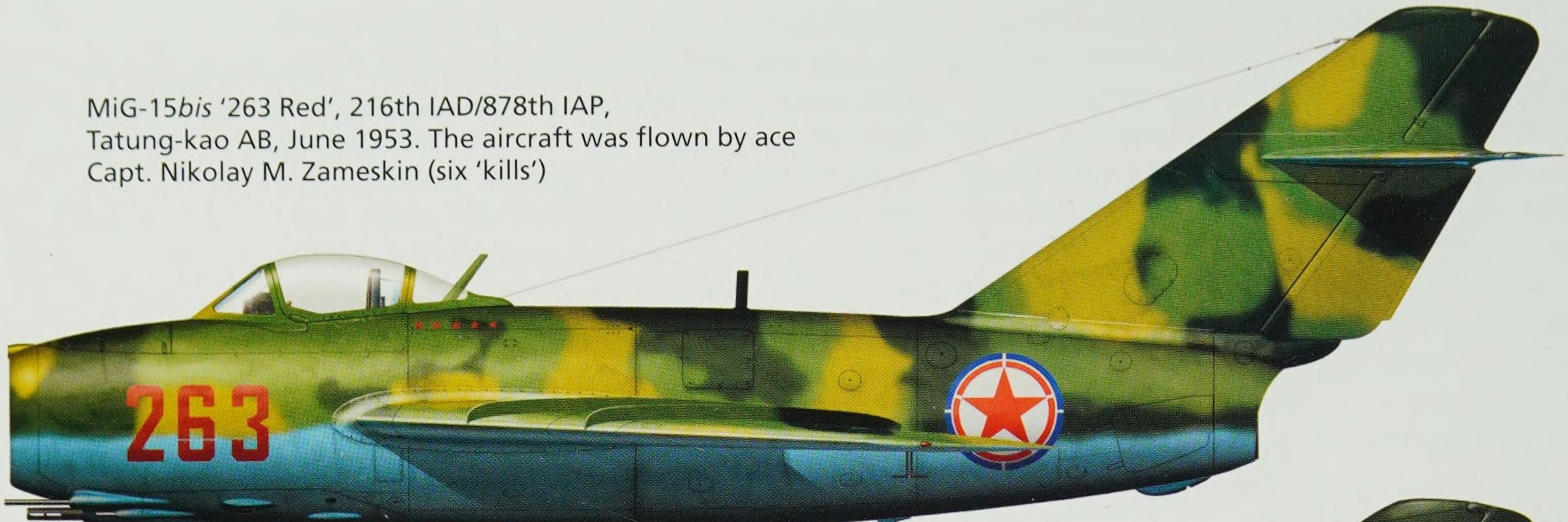
The MiG-15s fought in basic units of two aircraft, or pairs. The leader of a pair and his wingman always stuck together, since a single pilot left without cover was very vulnerable.



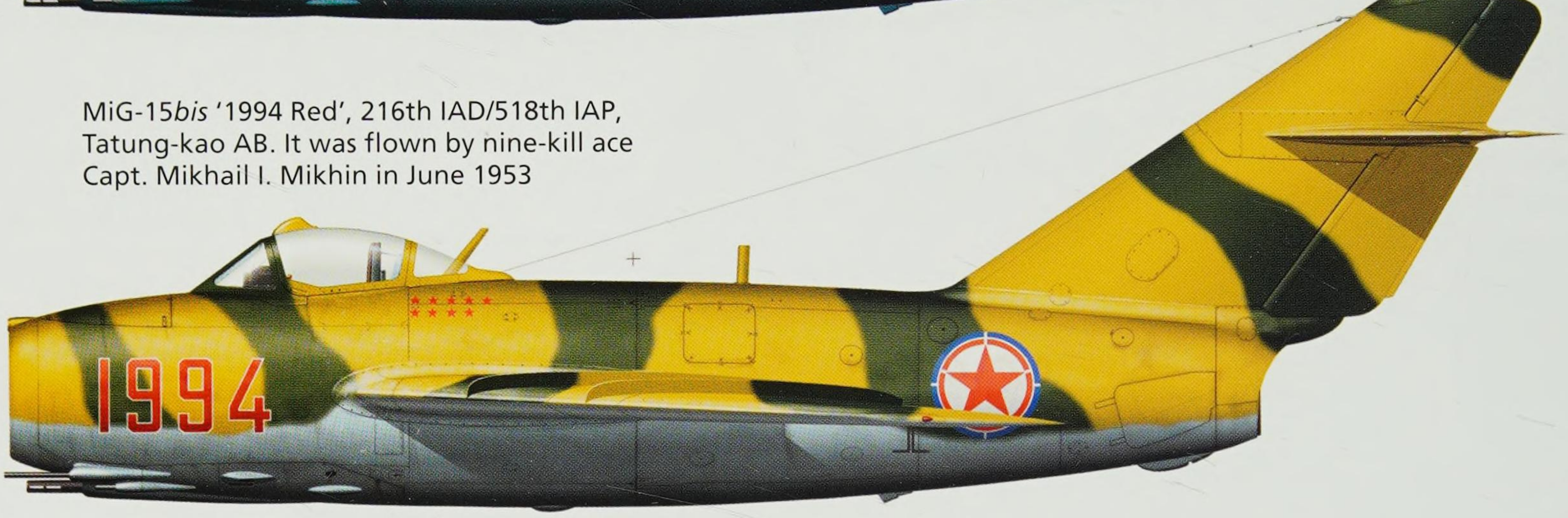
Lt (SG) Zh. S. Iskhangaliyev (351st IAP) in the cockpit of his MiG-15*bis* '976 Red' at Antung. The aircraft was not camouflaged due to its night fighter role. On the night of 30th/31st December 1952 Iskhangaliyev shot down a B-29, expending only ten 37-mm rounds and 26 23-mm rounds.



The same aircraft is pictured at Antung in the autumn of 1952 with another 351st IAP pilot, Maj. Kooltyshev, on the ladder.



MiG-15*bis* '263 Red', 216th IAD/878th IAP, Tatung-kao AB, June 1953. The aircraft was flown by ace Capt. Nikolay M. Zameskin (six 'kills')



MiG-15*bis* '1994 Red', 216th IAD/518th IAP, Tatung-kao AB. It was flown by nine-kill ace Capt. Mikhail I. Mikhin in June 1953

A pair usually comprised pilots with equal tactical skills, able to switch attack and cover functions as per necessity. Full psychological compatibility and a shared understanding of the logic of the combat made a pair of MiG-15 pilots formidable in combat.

At an early stage of the Korean War the MiG-15s operated in groups of eight (or, in Soviet terminology, two flights, since the Russians view a flight as two pairs). This was deemed a suitable size for supportive interaction in air-to-air combat. Starting in 1951, Soviet MiG-15 pilots began to fly in groups of six rather than eight at high altitudes – a tactic later adopted by the Sabres as well. A group of six offered flexibility and safety.

Quick-reaction alert (QRA) duty was performed in two-hour shifts, each shift being performed by a squadron of MiGs; thus the three squadrons in a regiment relieved each other. When the duty shift received the 'maximum alert' signal from the control tower the pilots would climb into their fighters, ready to scramble. While on the ground, unit commanders tried to keep the pilots sitting in their cockpits as little as possible to save their strength in the hot and humid climate. Two sorties per day was the average for MiG-15 pilots during the Korean War.

In the Korean War, a Soviet squadron was divided into three groups for different tactics and purposes: attack, combat air patrol (CAP) and reserve. The attack group consisted of at least one flight and was tasked with destroying the enemy's main force. The CAP group was to protect the attack group and act as reinforcement in case of need; this made for concentrated firepower when stopping a major enemy air raid. The reserve group (one or two pairs) supported these groups and repelled any fresh enemy fighters trying to join the fight. If not needed, the reserve group stayed on the ground.

The CAP and attack groups were usually arranged above one another. Separation equalled the vertical distance that the aircraft routinely needed during a yo-yo manoeuvre; this facilitated co-ordination between the groups. The same principle applied to the groups of six MiGs used from 1951 onwards, with the attack, CAP and reserve functions filled by one pair each.

After take-off, the MiGs often loitered above the objective they were defending. The MiG flights were arranged in two levels. Ground controlled intercept (GCI) operators informed the pilots about approaching enemy aircraft. The upper group of MiGs moved against the enemy with the advantage of altitude and speed. The escorting Sabres would then try to prevent the MiGs from attacking Allied strike aircraft.

The GCI alert system was based on a scheme tried and tested in the Great Patriotic War. The main GCI station monitored the situation by receiving target data from air defence radars and called the alert when enemy aircraft appeared. Forward pickets would be deployed in the battle area to monitor the situation visually and advise the MiG pilots of new targets and/or threats.

After a fight, the results were analysed in preparation for the next sortie or shift. Much importance was attached to the analysis of enemy tactics which frequently changed. After a period of intensive fighting the Americans would take a breather to correct errors and work out new tactics, and the Soviet pilots had to keep up with these.

Unlike the MiG-15 with its air defence role, the Sabres were free to choose the time and methods of their attacks, so the initiative belonged to them. Interestingly, the American pilots felt that it was the MiG-15s that held the initiative, since they operated close to their bases, remaining behind the Yalu if they chose to, and could begin a fight with the advantage of higher altitude.

The strengths and weaknesses of the aircraft flown by the opposing sides determined the tactics. The MiG-15s tended to fight in the vertical plane, the Sabres in the horizontal plane. When attacked, the MiGs would often climb in a spiral, trying to gain an advantage in altitude so as to dive down on the enemy. Knowing that, USAF pilots tried to force a turning fight on the MiGs, using the Sabre's superior turn rate. Another favourite Sabre tactic was to roll inverted and dive sharply when under attack. MiG pilots found it difficult to repeat this manoeuvre because speed built up quickly and the aircraft began experiencing control problems at Mach 0.92; the Sabre had a higher Mach limit than the MiG.

The most common tactic used by MiG-15 pilots in Korea was the hit-and-run tactic. After receiving target information from a GCI station the MiGs typically began a head-on engagement. They usually had the initial advantage of higher altitude and used it by diving on the enemy at high speed, pair after pair. If the enemy broke formation and began defensive manoeuvres as the first pair attacked, the second pair changed course and chose the most vulnerable target. After attacking, the MiGs immediately climbed away, using the speed gained during the dive. They tried to avoid sustained combat, but repeated the diving attack whenever possible. Success depended on good timing and, when well-executed, this method made it hard for the enemy to counterattack, since the Sabre did not have enough thrust to climb after the MiGs. A variation on this tactic involved diving

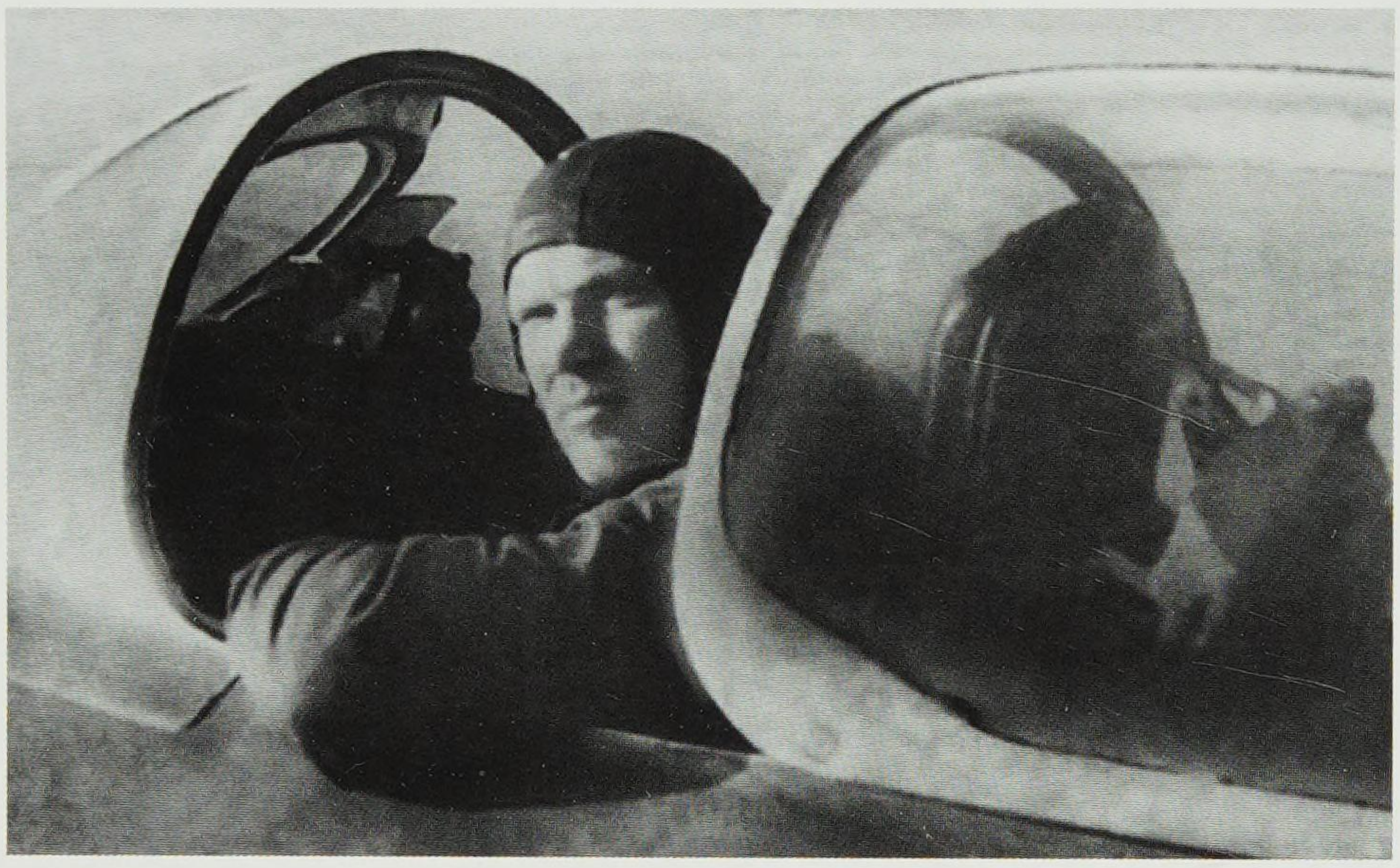
Soviet pilots involved in a skirmish with F-84s on 28th September 1952. Left to right: V. V. Kashin, Ye. K. Kaloshin, Kulesh and an unidentified pilot. Antung AB, early 1953.

on the target out of the sun and exiting toward the sun after making a firing pass.

A tactic called 'merry-go-round' was used during point defence of ground targets. Two pairs of MiG-15s formed a circle and the pilots covered each other. There were two or three such circles, one above the other, and the upper pair moved toward the enemy. Sabres usually attacked the lower echelon; then, a hit-and-run attack was launched against them from above and the MiGs went into a new circle after breaking off the attack. This tactic called for good co-ordination between the pairs.

A tactic called 'pincers' involved two flights of MiG-15s heading south on slightly diverging headings at 10,000 m (32,810 ft). The flights were beyond visual range of each other, so their actions were co-ordinated by GCI. Before meeting the enemy the MiGs descended to 4,500-6,000 m (14,760-19,685 ft) and turned north, heading towards each other. On the way back the flight searched for enemy fighter-bombers and small groups of Sabres heading back to their bases. At a predetermined time a third flight (sometimes a pair) of MiG-15s entered the 'pocket' created by the other two flights and attacked the enemy aircraft. In some cases, this flight or pair had the added purpose of covering MiGs returning from a sortie and low on fuel.

Six-kill ace Maj. N. M. Zameskin, Deputy Squadron Leader of the 216th IAD/878th IAP/Sqn 3, in the cockpit of his MiG-15*bis* at Miaogow in February 1953.



Maj. Zameskin (left) and his wingman V. V. Kashin discuss a dogfight. Miaogow, early 1953.

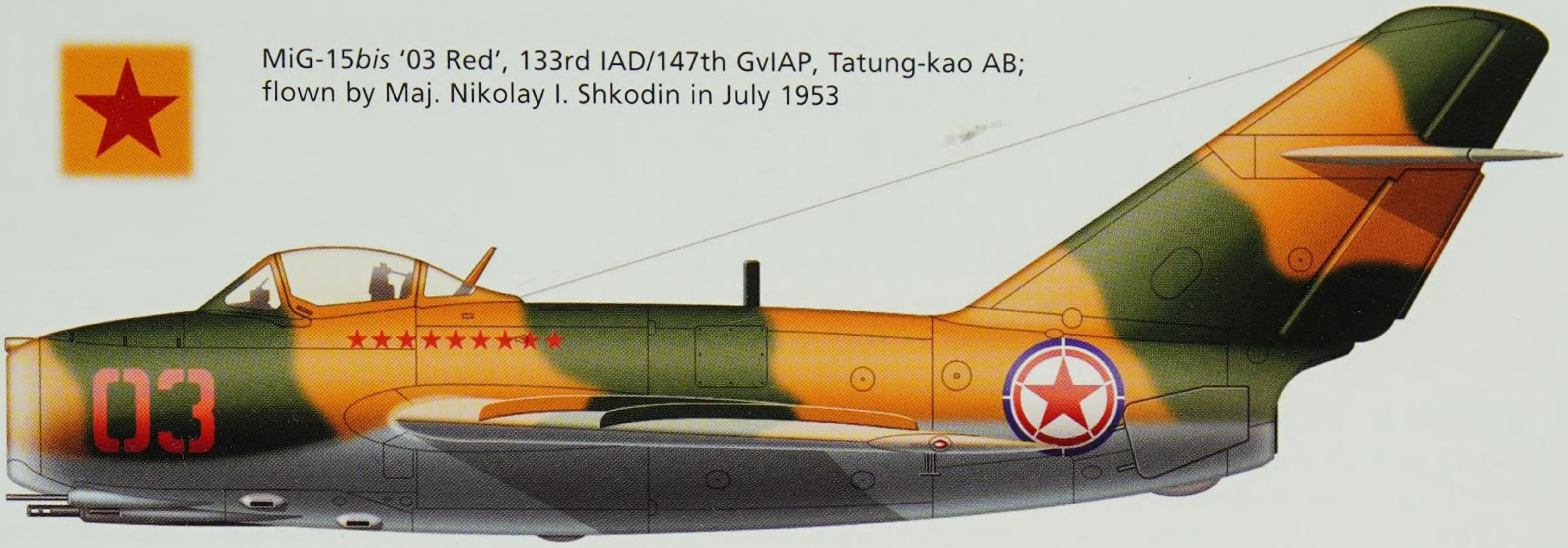
The 'distraction' tactic was fairly demanding, and MiG pilots used it only after gaining enough combat experience. The intention was to lure the patrolling Sabres away from their zones and clear the way for MiG-15s heading south to engage USAF attack aircraft. A ground picket monitored the situation and gave the OK for the strike group when the way was clear. The distracting group could also engage the Sabres as part of the main objective.

The 'snare' tactic was an active method. The Soviet commanders knew well that Sabre pilots delighted in hunting lone stragglers or pairs which had fallen behind larger groups, and they used this to set the trap. A squadron of MiGs formed a 'ladder', flying in pairs, flights, or sixes, the bottom one being nearest to the enemy. This lower echelon consisted of separate pairs that acted as bait for the patrolling Sabres. When attacked, the bait group turned tail and climbed away towards the other MiGs. The pursuing Sabres now found themselves at a disadvantage, facing attack from above.

The 'jaws' tactic was similar to the 'snare'. If the Sabres tried to climb after the MiGs acting as bait, the main group of MiGs formed a ladder in two echelons, one above the other, and the Sabres were attacked by the lower echelon.

The 'hit from underneath' tactic was used against Sabres and fighter-bombers flying at low altitude. Pairs of MiG-15s flown by the most skilled pilots entered the combat area at treetop level, destroying any enemy aircraft they detected. When counterattacked they disengaged quickly, flying nap-of-the-earth in the mountainous terrain. These tactics required careful planning, and every possible option had to be calculated.

According to Soviet sources, by the end of its Korean tour (February 1952) the 324th IAD had destroyed 207 enemy aircraft, 103 of them shot down by the 176th GvIAP and 104 by the 196th IAP. The 303rd IAD destroyed



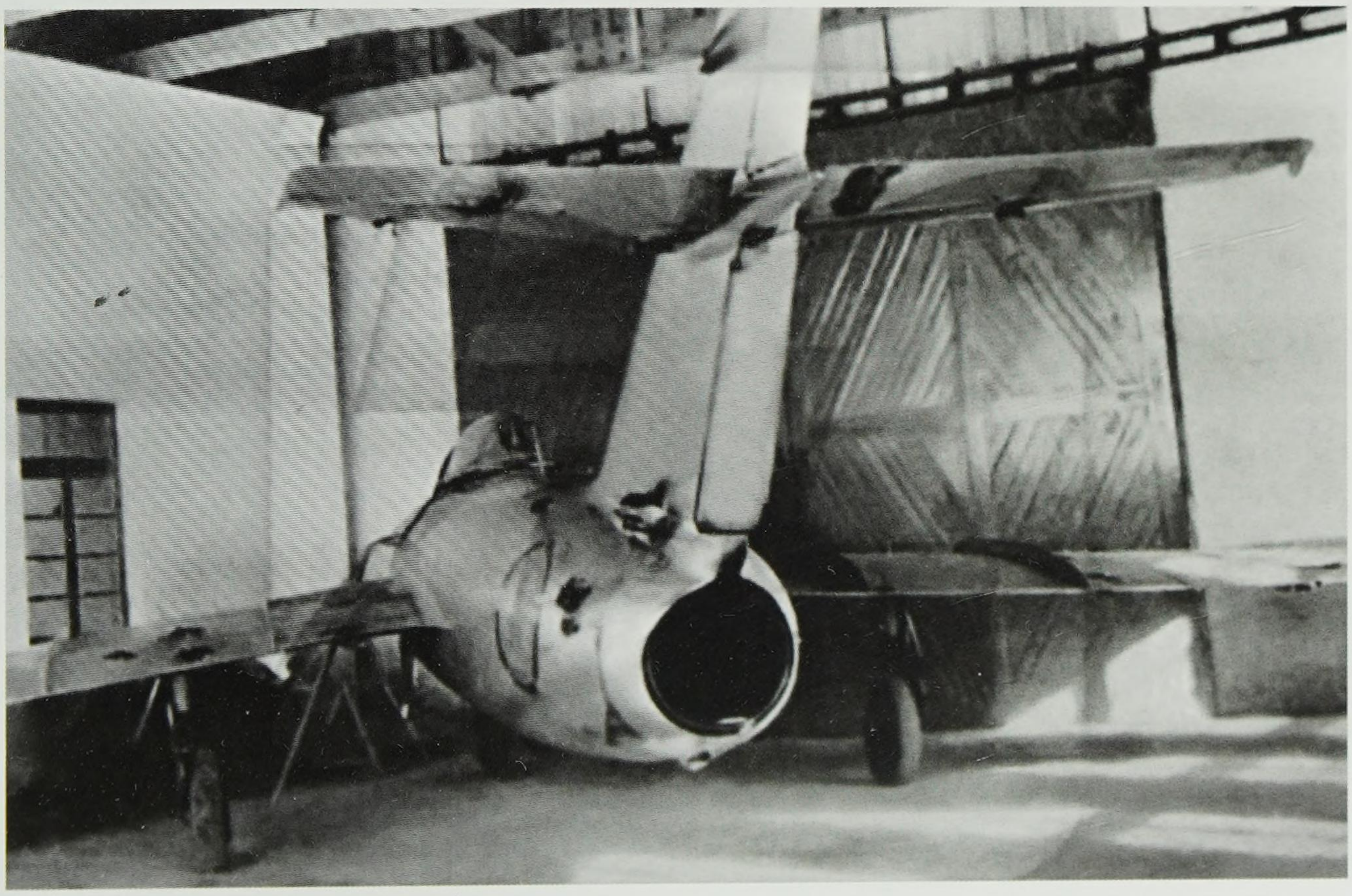
MiG-15*bis* '03 Red', 133rd IAD/147th GvIAP, Tatung-kao AB; flown by Maj. Nikolay I. Shkodin in July 1953

another 303 UN aircraft – a nice coincidence. Thus, Soviet pilots claimed 510 'kills' in less than a year of the conflict. Soviet losses totalled 22 aircraft in the 324th IAD and about 30 aircraft in the 303rd IAD, that is, about 50 MiG-15s. By the way, the 303rd Division's 494th IAP was just about the unluckiest of all Soviet units participating in the war. On one occasion a group of 494th IAP MiGs preparing to attack a group of Thunderjets was attacked by Sabres, which destroyed seven MiGs for the loss of only one USAF aircraft. By the end of the war, the unit's 3rd Sqn alone had lost 11 aircraft and two pilots.

Thus, the 'kill' ratio during this period was 10:1 in favour of the MiG-15 with Soviet pilots, if we count all UN aircraft shot down. (The loss records of the UN forces indicate that the allies lost about 40 aircraft, not 510, during the first year of the MiG-15's involvement.)

Stage Three of the Soviet involvement ran from January 1952 until the end of the Korean War. The 324th IAD returned to the USSR and was replaced by the PVO's 97th IAD under Col. Shevtsov, while the 303rd IAD was succeeded by the 190th IAD. Though officially ready for battle, the 97th was staffed with rookie pilots. To make matters worse, its début in Korea coincided with a massive improvement in equipment and training on the part of its adversaries as a result of the hammering they had taken during the second stage; in particular, the F-86E was introduced in August 1951 and the F-86F in March 1952.

The result was predictable: in March and April the 97th IAD suffered heavy losses; the



The MiG-15 could take a lot of punishment and still bring the pilot home. This MiG-15*bis* seen at a repair shop shows battle damage to the port wing and rear fuselage.

Americans resumed massive raids on North Korean communications and other vital targets, engaging Soviet MiGs even over China. By May the 97th IAD had learned its lessons the hard way and was beginning to regain control, but the preceding months of all-out warfare had overtaxed its resources; further participation in the war could lead to high and unwarranted losses. Hence in July 1952, four days after reinforcements in the shape of the 133rd IAD had arrived at Antung and Dapu, the 97th IAD was transferred to the second echelon of Soviet forces and moved to Mukden.

Additional Soviet fighter units (the 216th IAD and the Pacific Fleet's 32nd IAD) reached Korea near the end of the war, but their level of combat readiness was also low. Consequently they scored fewer kills and sustained higher losses than the second group (the 303rd IAD and 324th IAD). Still, although with flaws, MiG forces maintained an effective defence, and the UN coalition could not restore the supremacy it had enjoyed earlier.

UN fighter-bombers flying daytime sorties were one of the main targets for Soviet pilots during this stage. The reader should keep in mind that USAF fighter-bomber units were now equipped with F-86Fs instead of Shooting-and-Bombing Stars. Combating them wasn't easy at all.

USAF heavy bombers remained the other major target. Switching to night operations did not stop the B-29s from suffering losses. Two independent fighter regiments of the 64th IAK – the 298th IAP and 351st IAP – and one squadron in each of three other regiments (the 133rd IAD/147th GvIAP, 32nd IAD/224th IAP and 32nd IAD/535th IAP) were transformed into night fighter units at this stage. Initially, the 64th IAK used obsolete piston-engined La-11s in the night fighter role (the 351st IAP redeployed to Anshan on 13th June 1951 and joined the action against the US bombers two weeks later) but soon found them to be totally inadequate. Usually the Superfortresses flew their missions at altitudes of some 10,000 m (32,800 ft); it took the La-11s 26 minutes to climb to that altitude. At its service ceiling the La-11 possessed only a marginal speed advantage, not exceeding 20 km/h (12.4 mph), so the fighter's chances to score a victory were slender. All the more so, since the US pilots entered a shallow glide and easily made off towards the sea, once they were aware of the chase.

Not only that, but the La-11's machine guns were located on the upper side of the engine cowling, the muzzle flash dazzling the pilot for several seconds and causing him to lose sight of the target. As a result, not a single victory over the B-29 in the Korean War was ever scored by La-11 pilots. In early 1952 the 351st IAP had two squadrons – one equipped with MiG-15s and the other still equipped with La-11s.

At this stage the B-29s were escorted by USAF Lockheed F-94B Starfire and US Marine Corps Douglas F3D-2N Skyknight interceptors equipped with powerful radars, so that nocturnal combat was filled with drama for both sides. The first encounter between the MiG-15 and the Skyknight took place on 3rd November 1952; despite suffering battle damage, the MiG managed to make it back home and was operational again within a few days. The first night victory against a MiG was scored by a VMF(N)-513 Skyknight on the night of 8th November; According to US sources, Skyknight crews destroyed six MiGs. It is not known if any F3Ds were shot down by Soviet pilots, though they may have been misidentified as F-94Bs (of which 13 were reportedly destroyed).

In addition to the B-29, the USAF made active use of the Douglas A-26B/C Invader light bomber for night bombing raids. At least three A-26Bs were shot down by MiGs, though Western sources deny the loss of any Invaders in Korea. The 351st IAP's first victory while still flying La-11s was scored in the autumn of 1951 when by Lt V. Koorganov, a pilot of the 2nd Squadron, shot down an A-26. Tackling the Invader presented no difficulty; intercepting the B-29, however, was a much more arduous task.

Regarding the question of statistics, Soviet/Russian sources state that by the end of the war 64th IAK pilots – mostly flying MiG-15s – had destroyed 1,106 enemy aircraft (including 651 Sabres and 69 B-29s) in 1,182 air-to-air engagements. According to Russian sources, about 1,100 Soviet airmen fought in the Korean War. Fifty-two 64th IAK pilots became aces. They made up 15% of the 347 Soviet pilots scoring 'kills' in the Korean War but destroyed 416 enemy aircraft, or 37.6% of the total 'kills'. 22 of the Soviet pilots fighting in Korea earned the HSU title.

The situation in Korea was anything but calm in the immediate post-war years, and the Soviet MiG-15 units stayed there until 1954.

3 The 1950s – the Soviet Air Force's Golden Age

In the early/mid-1950s the fighter regiments equipped with MiG-15 *sans suffixe*/MiG-15*bis* *Fagot-A/B* and MiG-17 *sans suffixe*/MiG-17F *Fresco-A/C* day fighters, as well as bomber regiments equipped with IL-28 *Beagle* tactical bombers, made up the backbone of the Soviet Air Force's tactical arm. The La-15 was also in service in small numbers, and the MiG-19 *sans suffixe* (*Farmer-A*) supersonic day fighter had achieved initial operational capability. The attack air regiments were still operating propeller-driven IL-10Ms, but this type was gradually being displaced by suitably modified *Fagot-Bs*, which were transferred from fighter units as more modern fighters became available.

In the 1950s the performance of production aircraft was improving at an impressive rate. The most important parameter, speed, increased from 1,100 km/h (683 mph) at the beginning of the decade to 2,000-2,500 km/h (1,240-1,553 mph) at the end. As a result, aircraft which were regarded as up-to-date and even advanced a couple of years back were growing obsolete at an alarming rate; this was the case with the MiG-15, MiG-17 and IL-28. As of 1st January 1955 the Tactical Aviation had 30 bomber regiments operating more than 1,650 IL-28 tactical bombers, 19 attack air regiments equipped with 130 modified MiG-15*bis* fighters and some 1,700 IL-10Ms, and 45 fighter divisions which operated about 1,700 more *Fagot-Bs* and 2,150 assorted MiG-17s – not counting the *Fagots* and *Frescos* operated by the PVO.

The IL-28 was the main Soviet tactical strike aircraft of the 1950s. In addition to the basic *Beagle*, the bomber units of the FA operated the IL-28R reconnaissance version ([*samo**lyot**-*] *raz**ved**chik* – recce aircraft) and the IL-28U *Mascot* (*oo**cheb**nyy* [*samo**lyot***] – trainer).

A bomber unit of the Moscow Military District operating the Tu-2 piston-engined tactical bomber led the way in the service introduction of the twinjet in 1950. The availability of the IL-28U prototype speeded up the process a lot; 27 service pilots gained their IL-28 type rat-

Combat aircraft production in the Soviet Union in 1949-55

Type	1949	1950	1951	1952	1953	1954	1955	Total
IL-28	–	156	421	772	1,298	1,168	932	4,747
MiG-15	729	1,913	3,971	3,231	68	–	–	9,912
MiG-17	–	–	–	1,286	2,801	2,079	1,119	7,285
MiG-19	–	–	–	–	–	–	139	139
Yak-25	–	–	–	–	–	4	204	208

Previous page: A rare colour shot of operational IL-10Ms and their pilots.

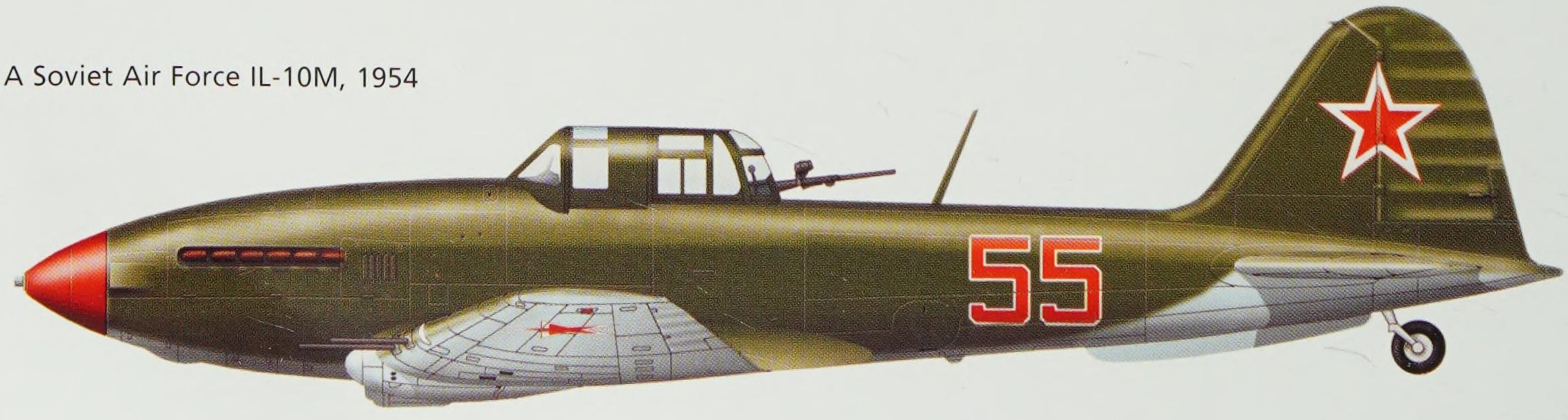
ings in just ten days, with a total of 112 training flights. In contrast, conversion of the same pilots to the Tu-2 had taken more than two months and a good deal more flying.

By the mid-1950s the Tactical Aviation had completed its transition to the IL-28. The units and formations stationed in the western military districts of the USSR, which were closest to the potential adversary, were the first to re-equip. These included the bomber divisions based at Chernyakhovsk (132nd BAD, Lithuania, Baltic MD), Starokonstantinov and Stryy (63rd BAD, Carpathian MD), Limanskoye (Odessa MD) and the like. Each division included two or three regiments comprising three squadrons each; each squadron had ten bombers (three flights of three plus a reserve aircraft) and one or two IL-28U trainers. For instance, the 63rd BAD (*bombardi**rov**ochnaya **a**viadi**vee**ziya* – bomber division) of the 57th VA included the 7th FBAP (*fronto**voy** bombardi**rov**ochnyy **a**via**polk*** – tactical bomber regiment) at Starokonstantinov (Khmel'nitskiy Region) and the 408th FBAP at Stryy (L'vov Region; some sources say Cherlyany AB). Other units operating the IL-28 included the 230th FBAP at Cherlyany AB (also in the L'vov Region) and the 114th BAP which was established at Starokonstantinov in 1952 but moved to Domna AB (Chita Region, Transbaikalian MD) in 1968, the 733rd BAP which also moved to Domna, the 188th BAD at Marneuli, Georgia (Transcaucasian MD), comprising the 367th BAP at Dallyar (Azerbaijan), the 373rd BAP at Koda and the 650th BAP at Marneuli.

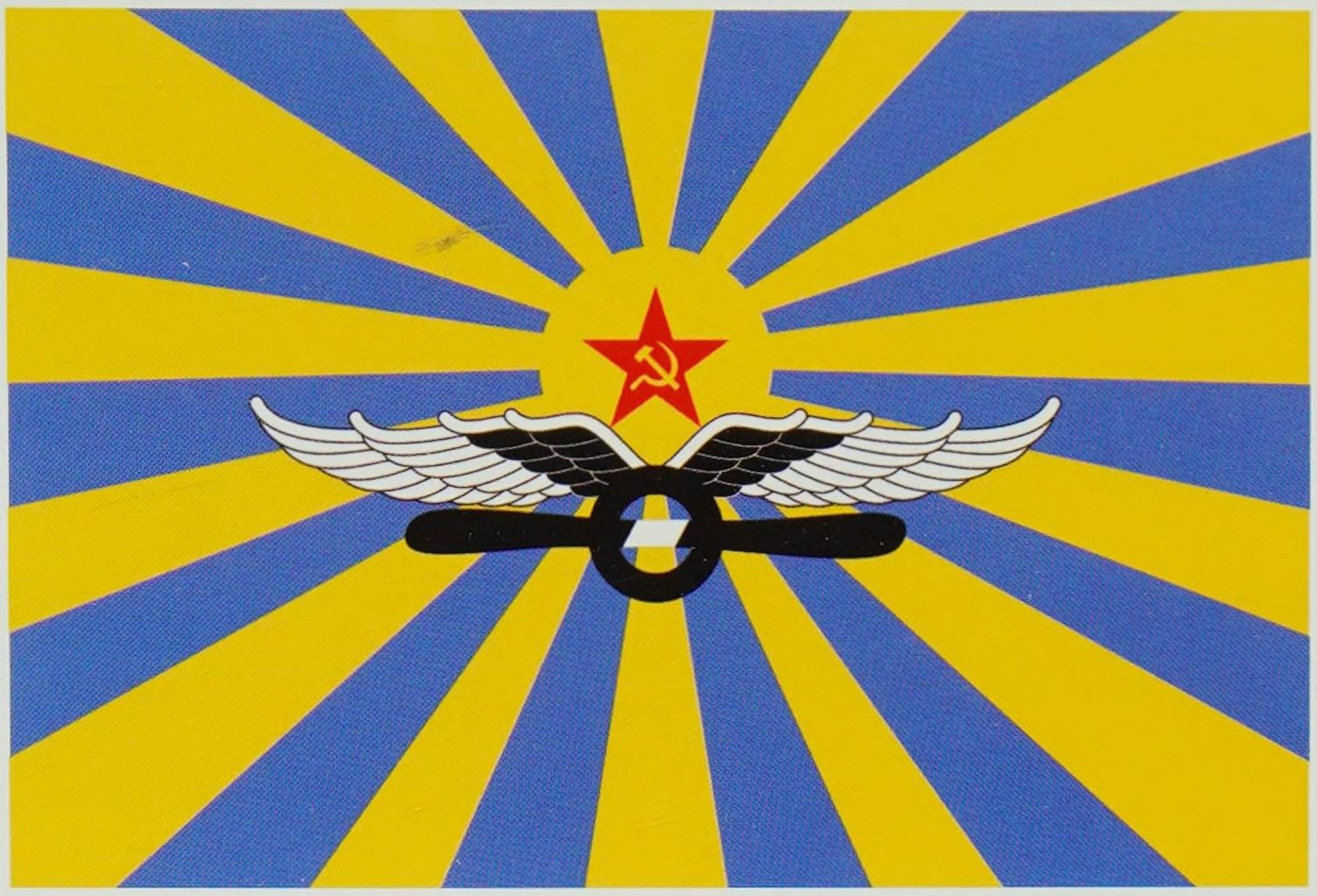
The IL-28 introduced a bomb-aiming radar making it possible to take aim even if the target was obscured by cloud; it also gave the tactical bomber force nuclear capability, which was particularly welcome during the Cold War years. In fact, the *Beagle* contributed a lot to the development of Soviet free-fall nuclear weapons, being used to test the 1,200-kg (2,645-lb) RDS-4 nuclear bomb with a yield of 30 kilotons which became the standard weapon of the IL-28N version (*no**sit**el'* – carrier [of nuclear weapons]). On 3rd August 1953 a specially modified IL-28 operating from Zhana-Semey AB dropped the first Soviet hydrogen bomb at the Semipalatinsk proving ground in Kazakhstan. Nine days later two IL-28s monitored the test of the first Soviet neutron bomb at the same location.

New combat tactics were developed for the IL-28. Crews practiced night operations and close-formation flying in flights, squadrons and regiments; the distance between aircraft in a flight was no more than 40 m (130 ft) and the separation between flights in a regiment did not exceed 80 m (260 ft). As the VVS built up experience with the type, pilots stated making formation take-offs from dirt strips in groups of three to nine aircraft.

A Soviet Air Force IL-10M, 1954



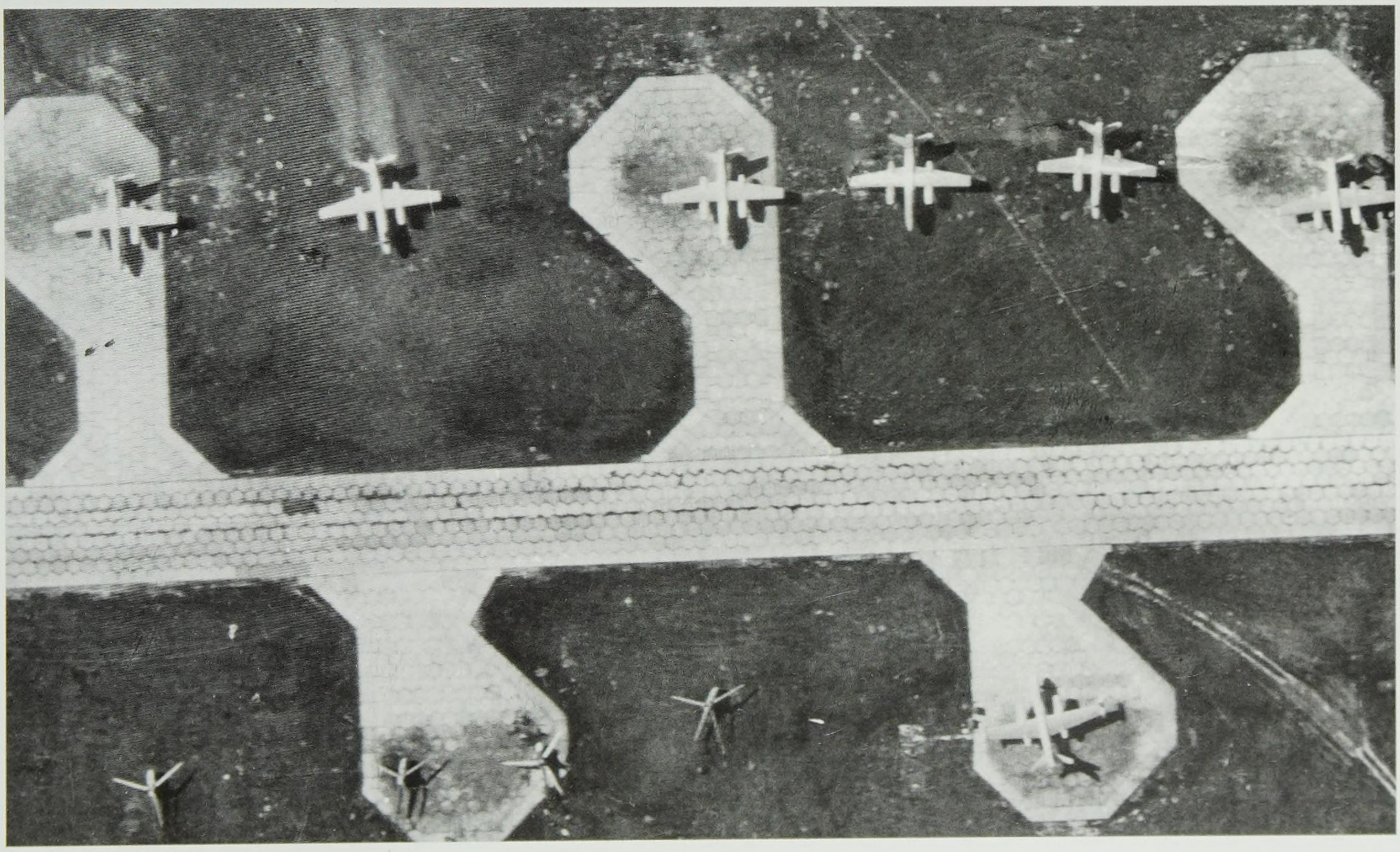
From time to time the units flying the *Beagle* deployed to remote bases for training purposes; for example, the IL-28s of the 63rd BAD would travel as far as Karshi in south-eastern Uzbekistan (Central Asian MD) and Maryy (pronounced like the name Marie) in Turkmenia (Turkestan MD). During such 'raids' the crews would practice bombing attacks at unfamiliar target ranges. Bombs were dropped from altitudes of 100-10,000 m (330-32,810 ft), both by single aircraft and formations of varying size. Special targets with a high radar signature were built at such ranges. Occasionally, however, disoriented bomber crews would unload their bombs on nearby collective farms, since their image on the PSBN-M's radar display was very similar to the practice targets. Fortunately the damage was usually minimal because practice bomblets were normally used. But one night a major disaster was averted at the last moment. A 277th BAP IL-28 carrying a live 1,000-kg (2,204-lb) FAB-1000 high-explosive bomb took off from an airbase near Stanislav (now Ivano-Frankovsk), heading for a target range at Kamenka-Boogskaya, but strayed off course and overflew the city of L'vov instead. It was sheer luck that the bomb-aimer happened to look away from the radar display a few seconds before the drop and saw the city lights below.



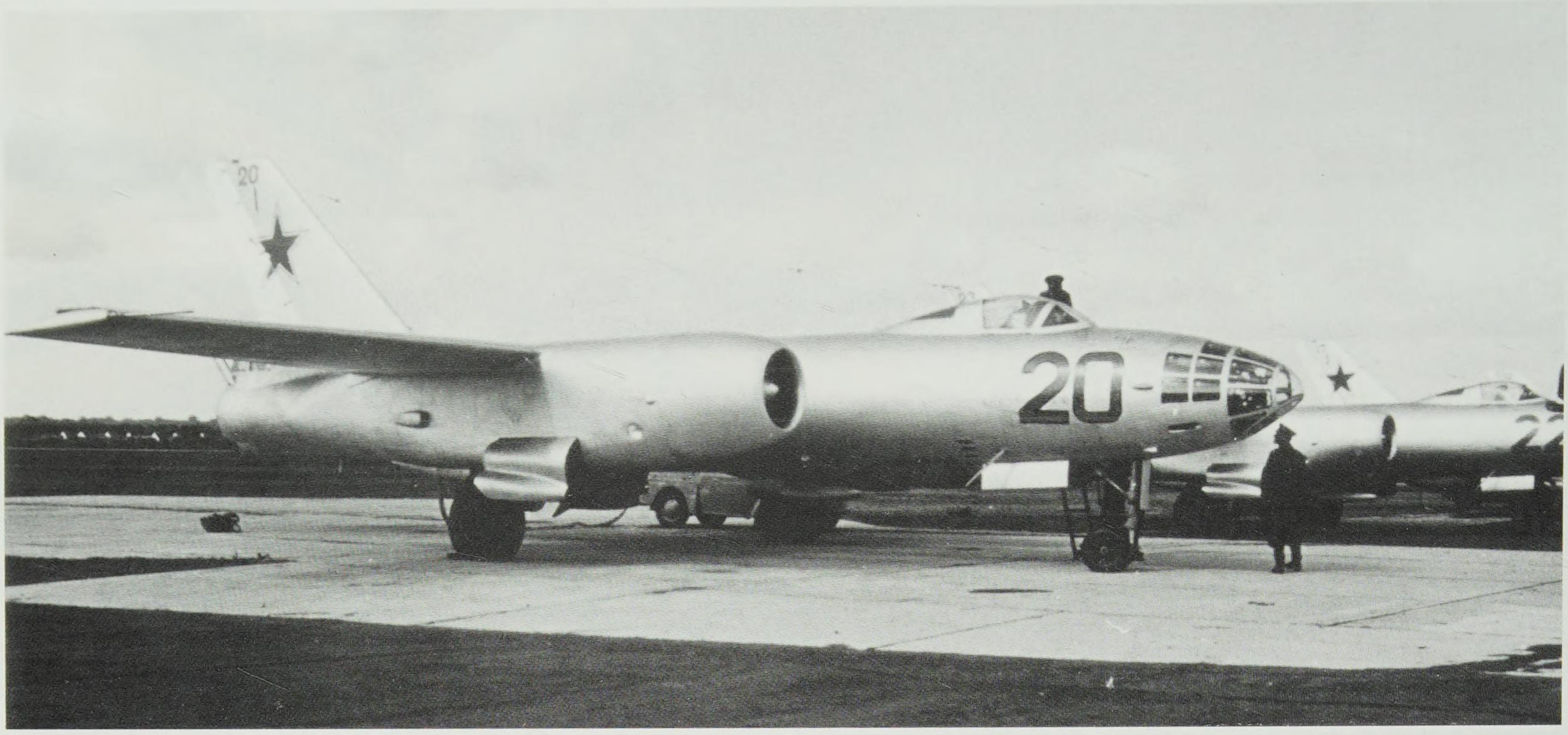
The Soviet Air Force's 'sunburst' flag. The current Russian Air Force flag is quite similar.

Penetrating enemy air defences was an important aspect of the IL-28 crews' combat training. Mock combat with MiG-15s and MiG-17s impersonating enemy fighters showed that a fighter armed solely with cannons had no chances of stopping the *Beagle*. If intercepted in head-on mode, the bomber's high speed and the resulting huge closing rate left the fighter pilot little time to take aim; in pursuit mode the bomber's effective tail cannon barbette and high manoeuvrability enabled the crew to repel stern attacks.

Once the IL-28 crews had learned to fly in poor weather and at extreme altitudes, use



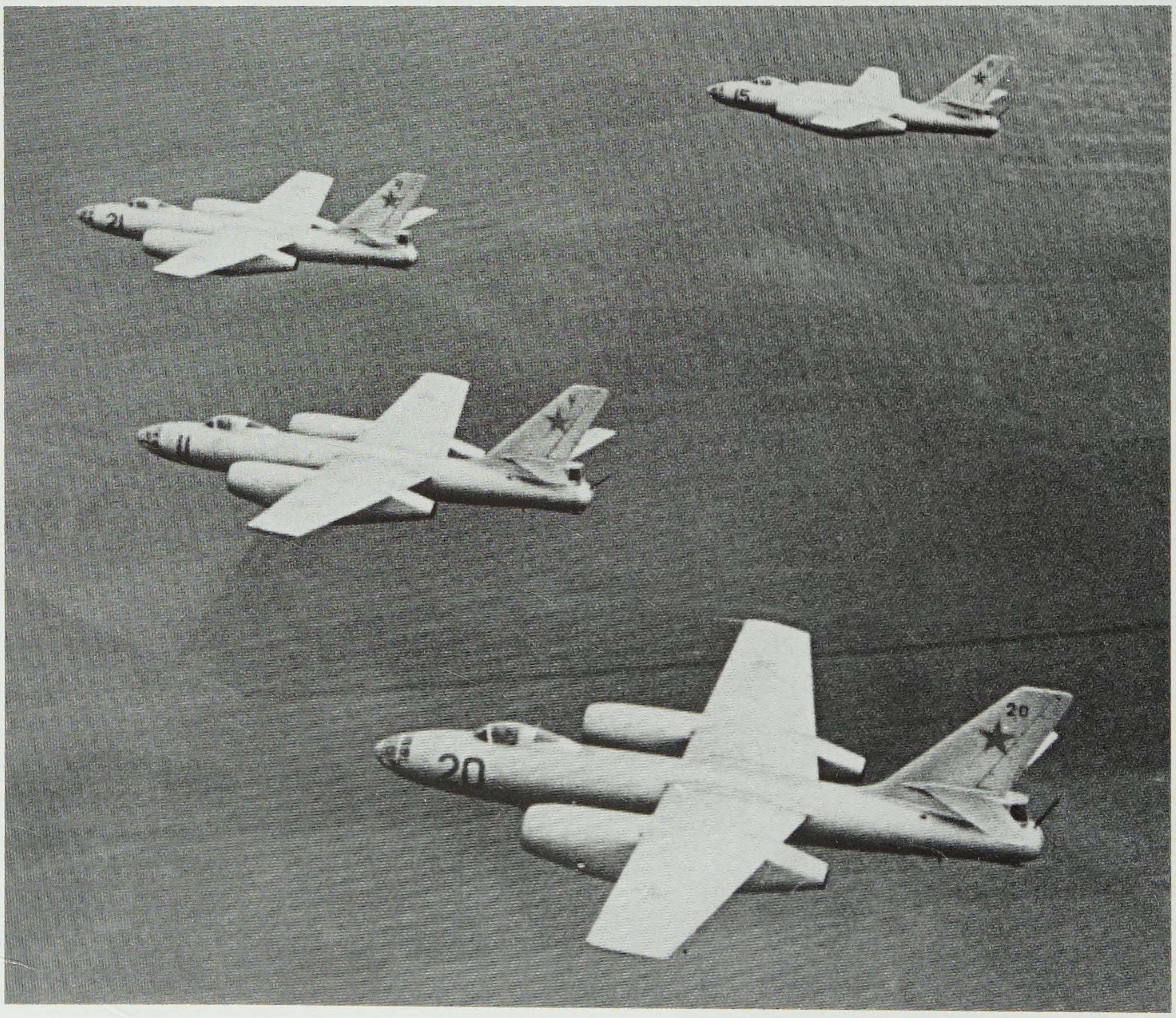
IL-28s and Mi-1 helicopters at the dispersal area of a Soviet airbase.



An IL-28 with attending power cart prepares to start the engines prior to a sortie.

the bomb-aiming equipment (the radar and synchronised optical sight) and the defensive armament effectively, Soviet tactical air power received a major boost. For the Western world the hundreds of nuclear-capable bombers were one of the personifications of the telltale Soviet Threat – and with good reason, too. The crews of these aircraft were carefully chosen and received especially rigorous training. Each crew was allocated a main target and several alternate targets in Western Europe: nuclear weapons depots, airbases etc. For instance, the already mentioned 63rd BAD was to attack targets in West Germany.

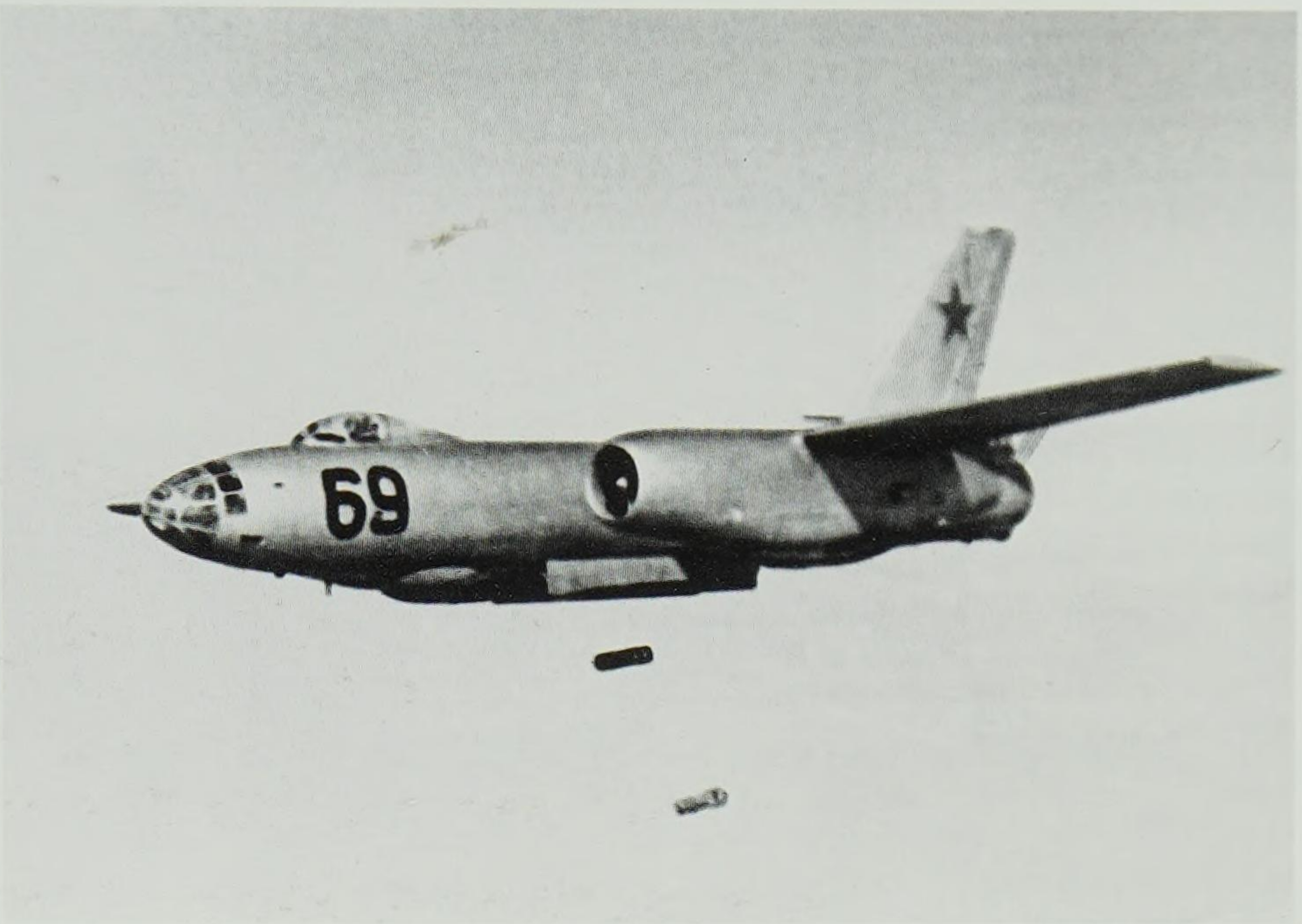
A flight of IL-28s cruises over typically flat East European countryside during an exercise. '20 Red' in the foreground is probably the same aircraft as depicted above.



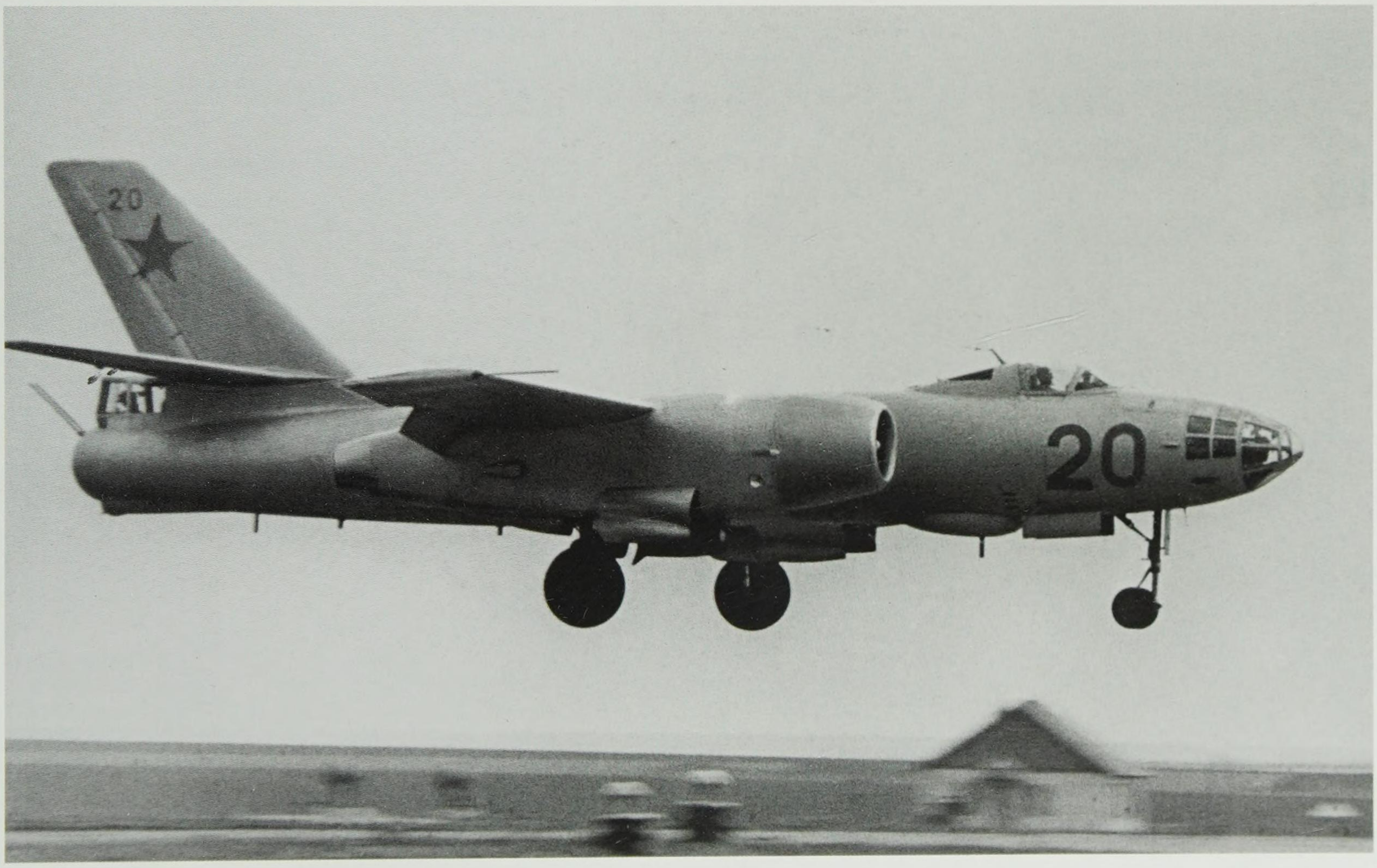
In the event of war the tactical scenario for the *Beagle* units was approximately as follows. Each IL-28N carrying a nuclear bomb would be accompanied by at least a squadron of sister aircraft tasked with the electronic countermeasures (ECM) and air defence distraction role. At first the bomber formation would cruise at 10,000 m (32,810 ft) in order to save fuel. Then, setting up an ECM barrier, the bombers descended to low altitude over Poland to avoid detection by the powerful surveillance radar in West Berlin – NATO's first line of defence; some of the aircraft left the formation, making deceptive manoeuvres to confuse the AD radar operators. The same tactic was used to get past the numerous Hawk, Nike Hercules and Nike Ajax surface-to-air missile (SAM) systems. Eventually the IL-28N would be left all alone, pressing on towards the target at treetop level. Then it would climb sharply to 1,000 m (3,280 ft), allowing the navigator to make sure they were in the right place, whereupon the bomb was dropped and the aircraft headed back, descending to ultra-low level again as it did. The idea was that the IL-28's high speed would enable it to outrun the shock wave and the crew would be protected from the flash by special blinds.

Still, even if the bomber managed to deliver the bomb, it had virtually no chances of returning because, with all the evasive manoeuvres, it was sure to run out of fuel on the way home. To remedy this, auxiliary airfields were initially built in Poland and East Germany where the bombers were to make refuelling stops. Later, bomber units operating the IL-28 were stationed in Poland and East Germany (see Chapter 6), which placed them within range of the south coast of England.

A case is on record when the *Beagle* actually did operate in a nuclear environment, albeit on home ground. On 14th September



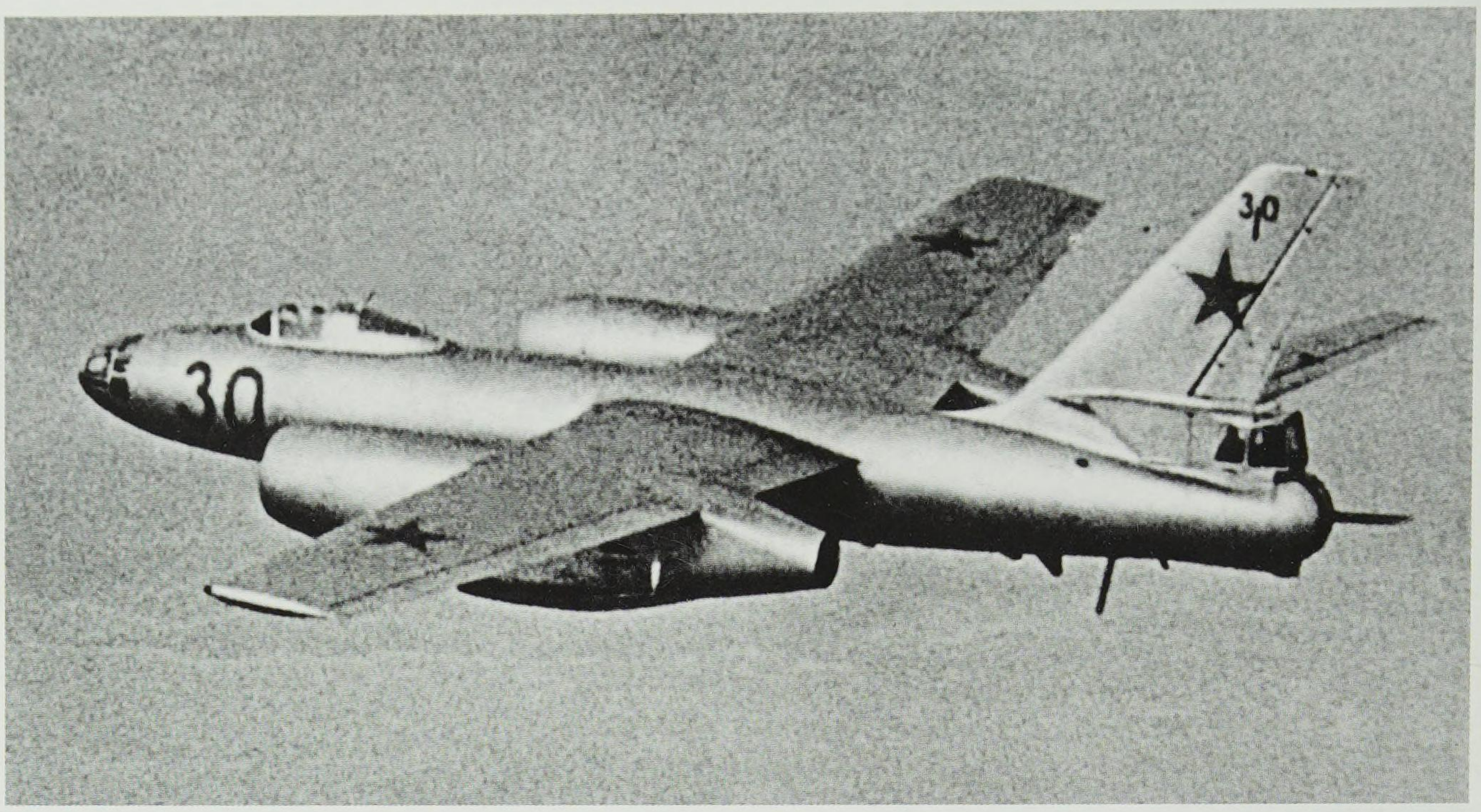
An IL-28 (probably blue-coded) drops a stick of bombs.



Flaps fully deployed, an IL-28 is seen seconds before touchdown. It is not the same aircraft as shown opposite.

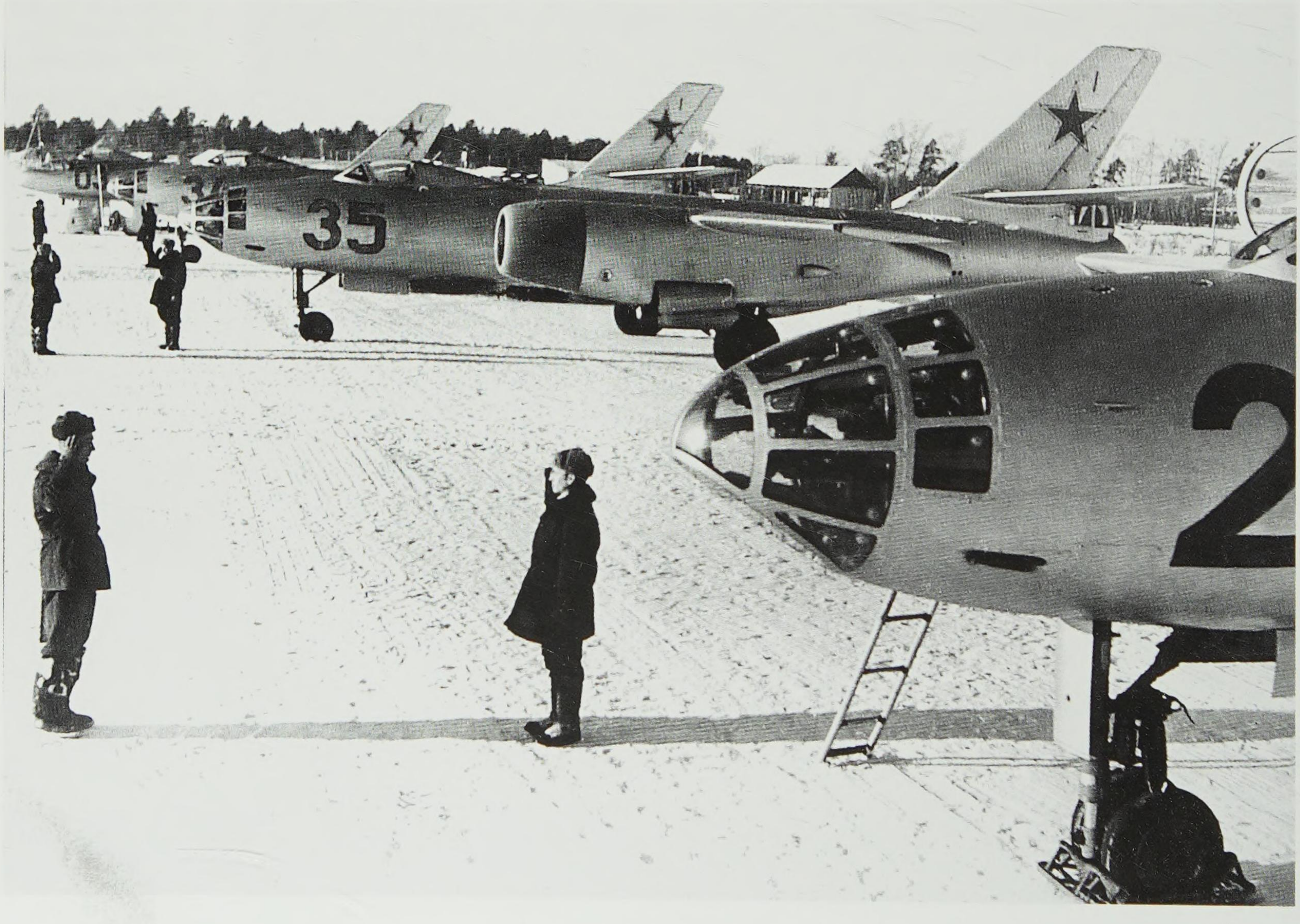
This IL-28 is unusual in having three ventral aerials ahead of the gunner's station.

Opposite: A fine study of a standard (and well-weathered) IL-28.



A typical publicity shot showing a group of IL-28 preparing for a training session at a wintry airbase. At least one aircraft ('35 Red') has red-painted cowlings. Note the IL-28U at the far end of the flight line.

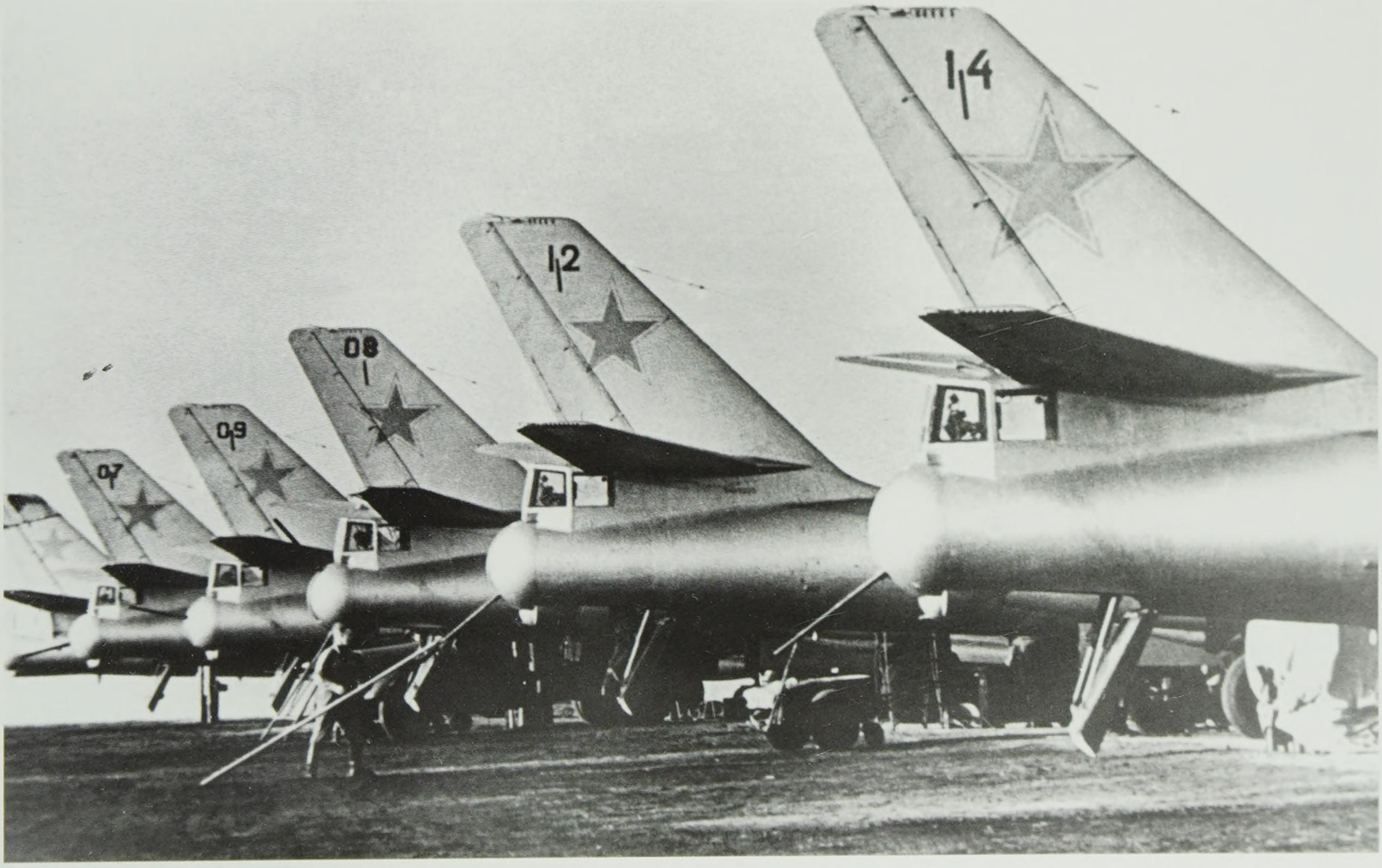
1954 the entire 149th BAD comprising three regiments of IL-28s participated in Operation *Sne***zhok** (Snowball) – a tactical nuclear exercise at the Totskoye training range in the Orenburg Region (in the southern Urals) commanded by Minister of Defence Nikolay A. Bulganin and his deputies Marshal Aleksandr M. Vasilevskiy and Marshal Gheorgiy K. Zhookov. Each bomber squadron was escorted by two flights of MiG-17s. When a nuclear bomb was detonated 350 m (1,150 ft) above ground, creating the tell-tale mushroom cloud, the incoming armada started to steer clear but suddenly a freak wind blew the radioactive cloud straight into its path. The jets were flying in close formation and there was

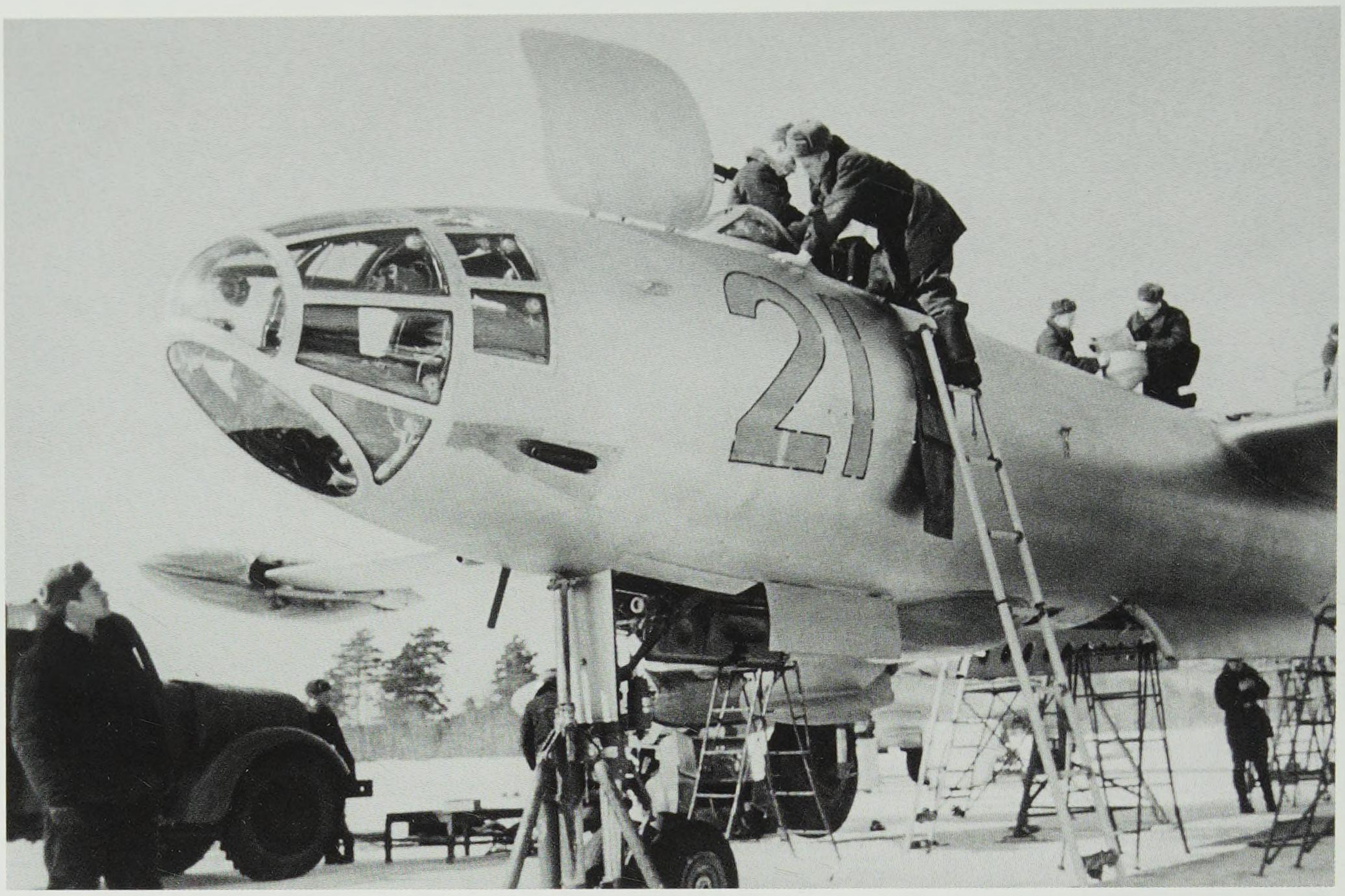


not much room for manoeuvre because of the danger of collision; most aircraft managed to take evasive action, but some went smack into the cloud. The pilots wore dark goggles to protect their eyes from the flash but no other form of protection; many participants of the exercise who were directly on the 'battlefield' later died of the effects of radiation.

The closest the Soviet IL-28s came to actual combat was Operation *Vikhr'* (Whirlwind) in October 1956 when a large group of Warsaw Pact forces was deployed to Hungary to squash the anti-communist uprising. More than 120 *Beagles* based in the Carpathian DD were placed on maximum alert duty, ready to launch strikes against the insurgents.

Maintenance day at an IL-28 unit. The second aircraft in the row, '12 Blue', is having its tail cannons cleaned. Note the open gunner's hatches.



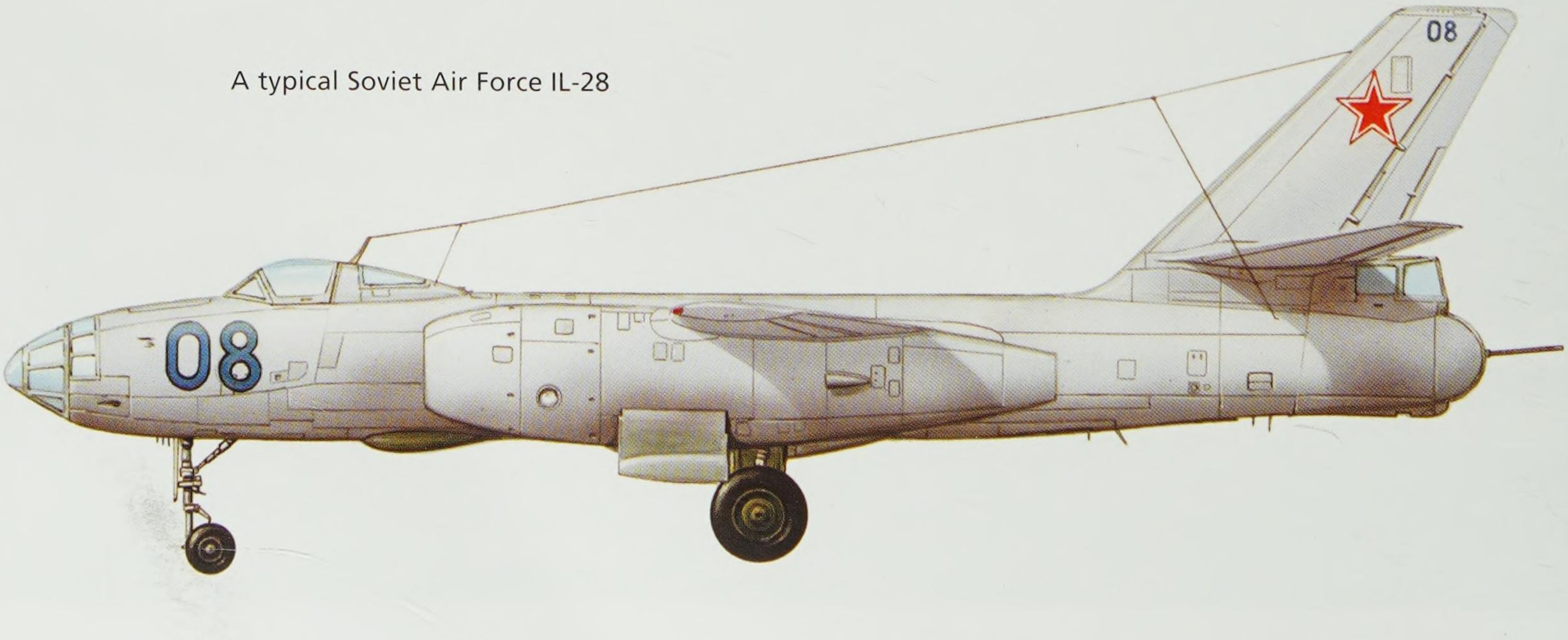


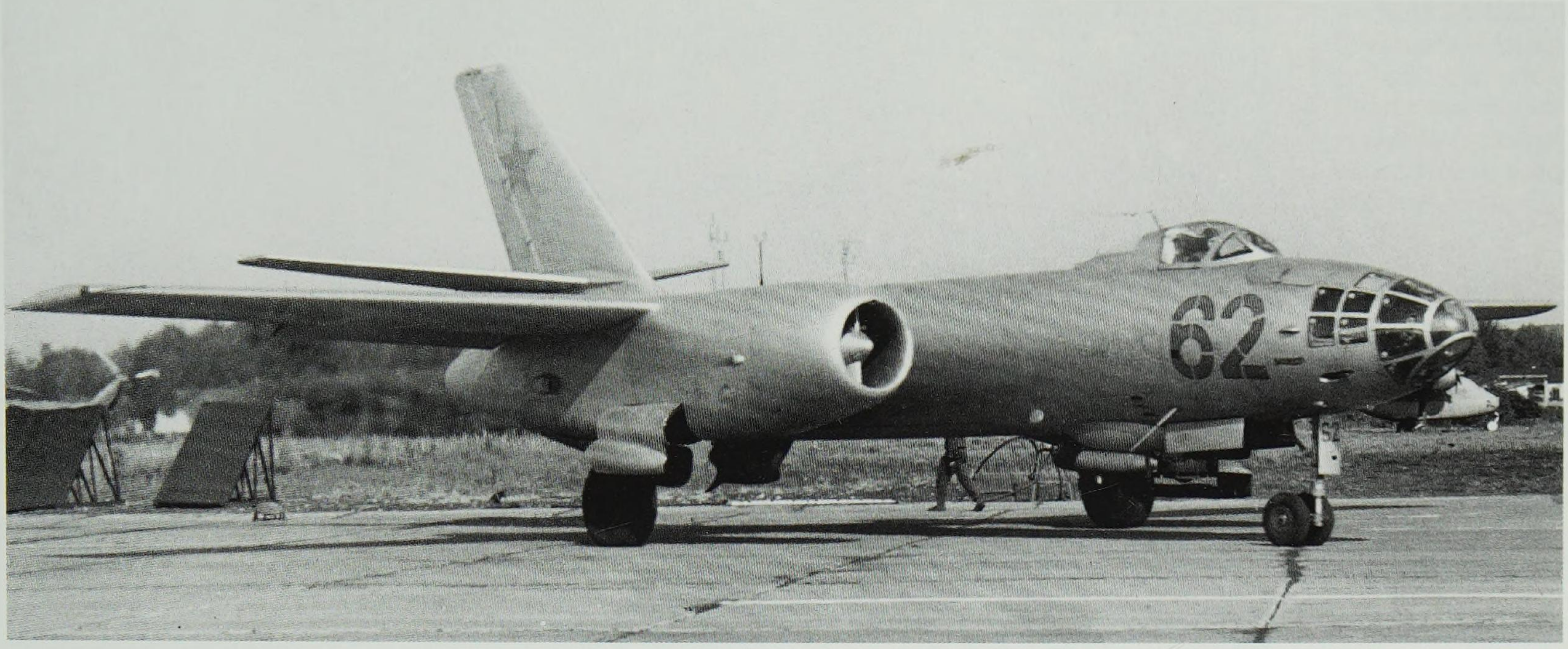
Maintenance in progress on an IL-28R reconnaissance aircraft (note the wingtip fuel tanks). The aircraft is jacked up for a landing gear check.

Fortunately this never happened, but Soviet IL-28Rs seconded to the Special Corps quelling the mutiny did fly reconnaissance missions over Hungary. One of them was shot down by the rebels over Csepel Island on the Danube on 8th November 1956, killing the crew. On 18th December 1956 the Presidium of the USSR Supreme Soviet (the nation's top governing body) issued a decree granting the HSU title posthumously to an IL-28 crew – squadron commander Capt. A. A. Bobrovskiy (pilot), Capt. D. D. Karmishin (navigator) and the squadron's chief of communications Lt. (SG) V. Ye. Yartsev (gunner/radio operator). This must have been the crew in question.

As regards tactical fighters, the Soviet Air Force's main fighter type in the early 1950s was the MiG-15, which attained initial operational capability (IOC) with the VVS in 1949, and the improved MiG-15*bis*. As an aside, it should be noted that the *Fagot* had a strong rival – the La-15 *Fantail*, which likewise entered production in the late 1950s and showed similar performance; even the layout was somewhat similar (high-wing/T-tail for the Lavochkin fighter versus mid-wing/cruciform tail for the MiG). Moreover, the MiG-15 was actually slightly inferior to the 'aircraft 168' and especially 'aircraft 176' prototypes sharing the La-15's layout; on the other hand, it was much better suited for mass production than the Lavochkin types. OKB-301 head Semyon A. Lavochkin wrote to Soviet leader Iosif V. Stalin, contesting the choice of the MiG-15

A typical Soviet Air Force IL-28



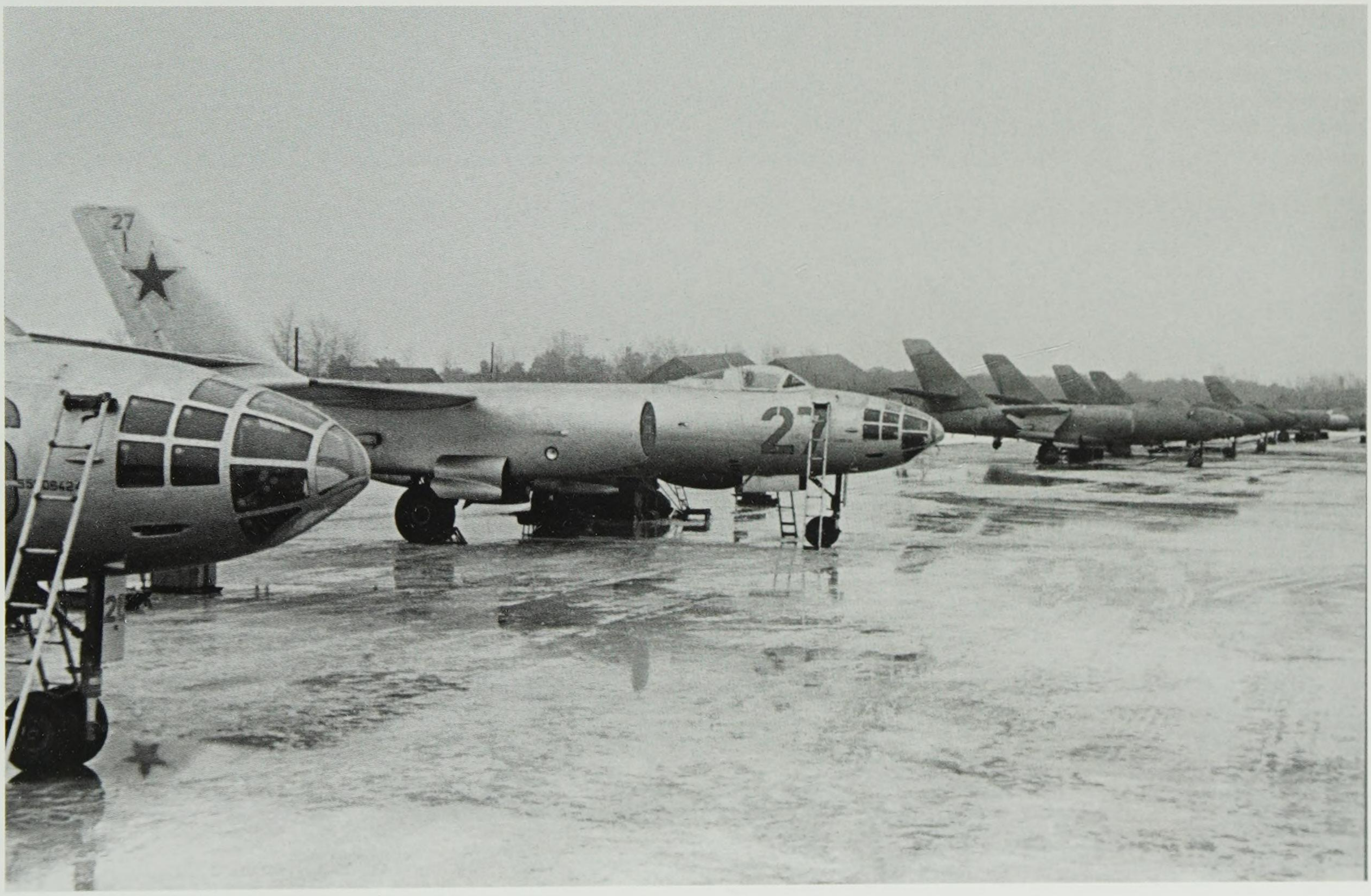


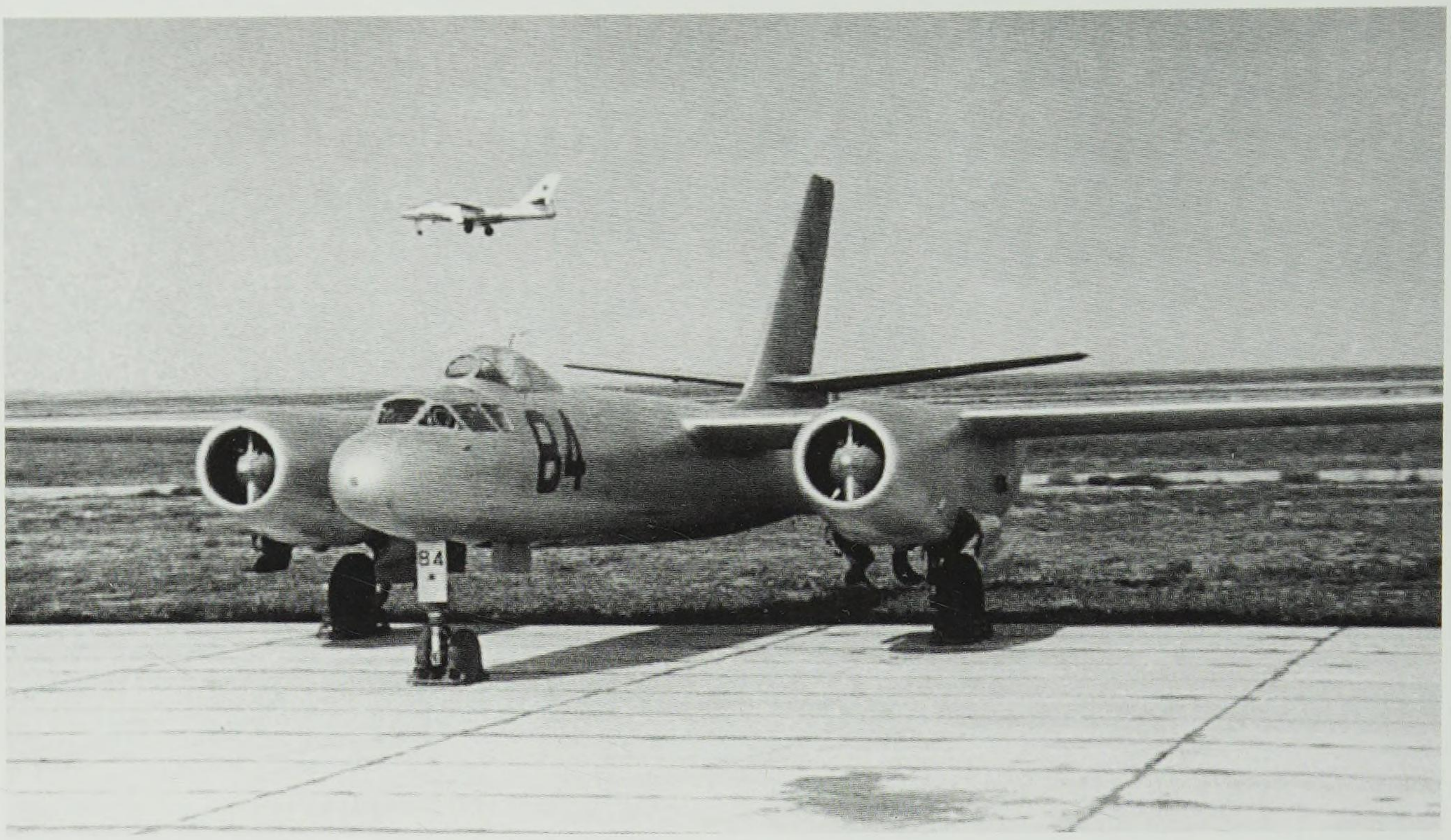
IL-28 '62 Blue' taxies out for take-off.

over his fighter. Yet, OKB-301's fighter prototypes had crashed more than once during trials, and Stalin tended to view aircraft having an accident record with a jaundiced eye. Knowing this, Lavochkin mentioned only 'aircraft 168' in his letter, leaving out 'aircraft 176' which had been the first Soviet fighter to exceed Mach 1 on 26th December 1948 but had crashed fatally on 3rd February 1949. The '168' had considerable structural commonality with the La-15, and aircraft factory No.21 in Gor'kiy would have found it easier to build this aircraft rather than the MiG-15. Still, the Soviet government would not change its point of view; on 14th May 1949, with the consent of the Air Force, it took the decision to build only the MiG-15 (which met the Air Force's requirements anyway) and terminate La-15 production in Gor'kiy. The La-15 had a production run of only 253 (more on this later).

Now, let's return to the MiG-15. The 324th *Sveerskaya* IAD's 29th GvIAP commanded by

The two IL-28s in the foreground are on quick-reaction alert (note ladders); the others are not, and are under wraps.





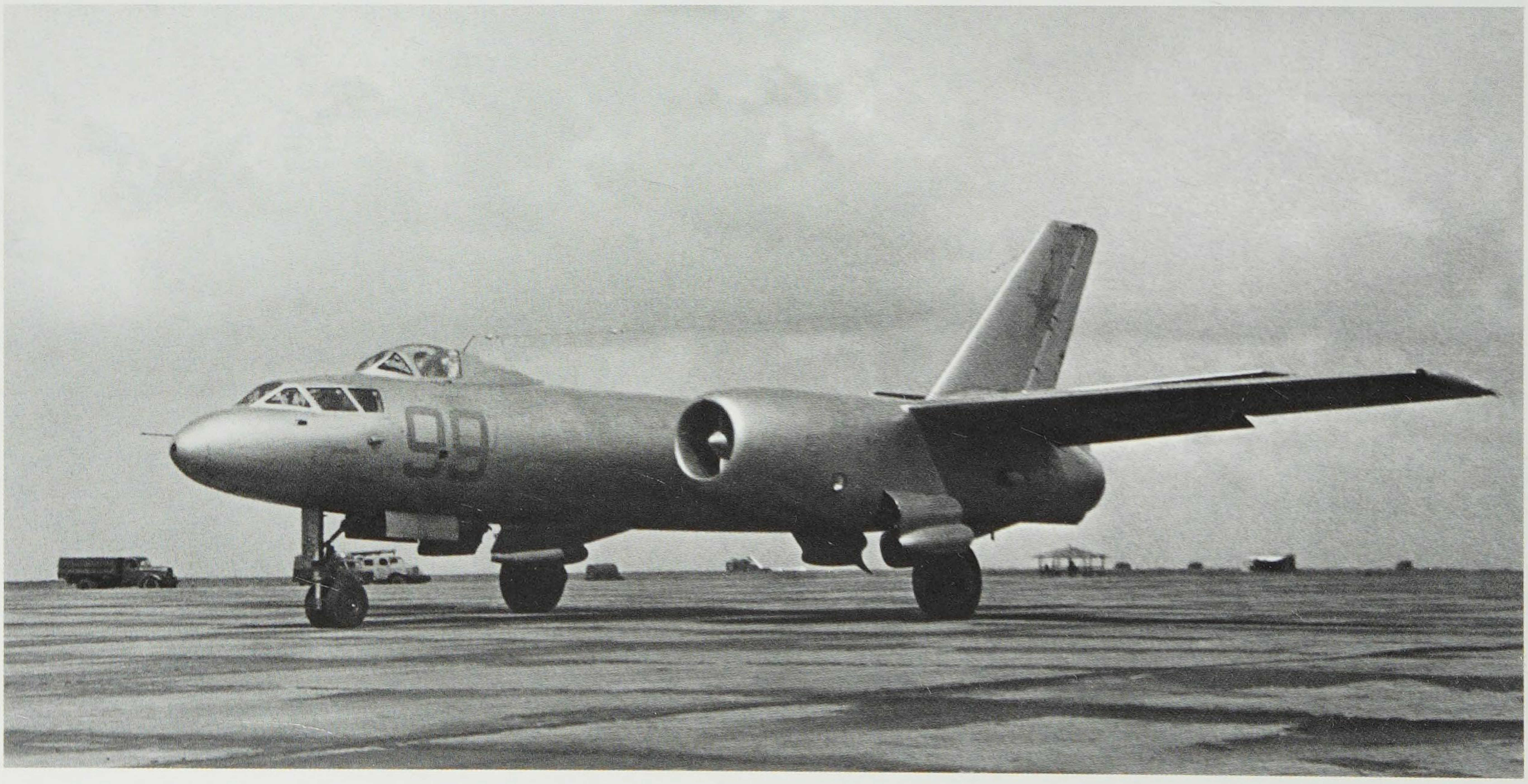
IL-28U '84 Blue' basks in the sunshine as a sister ship makes a low flypast in the background.

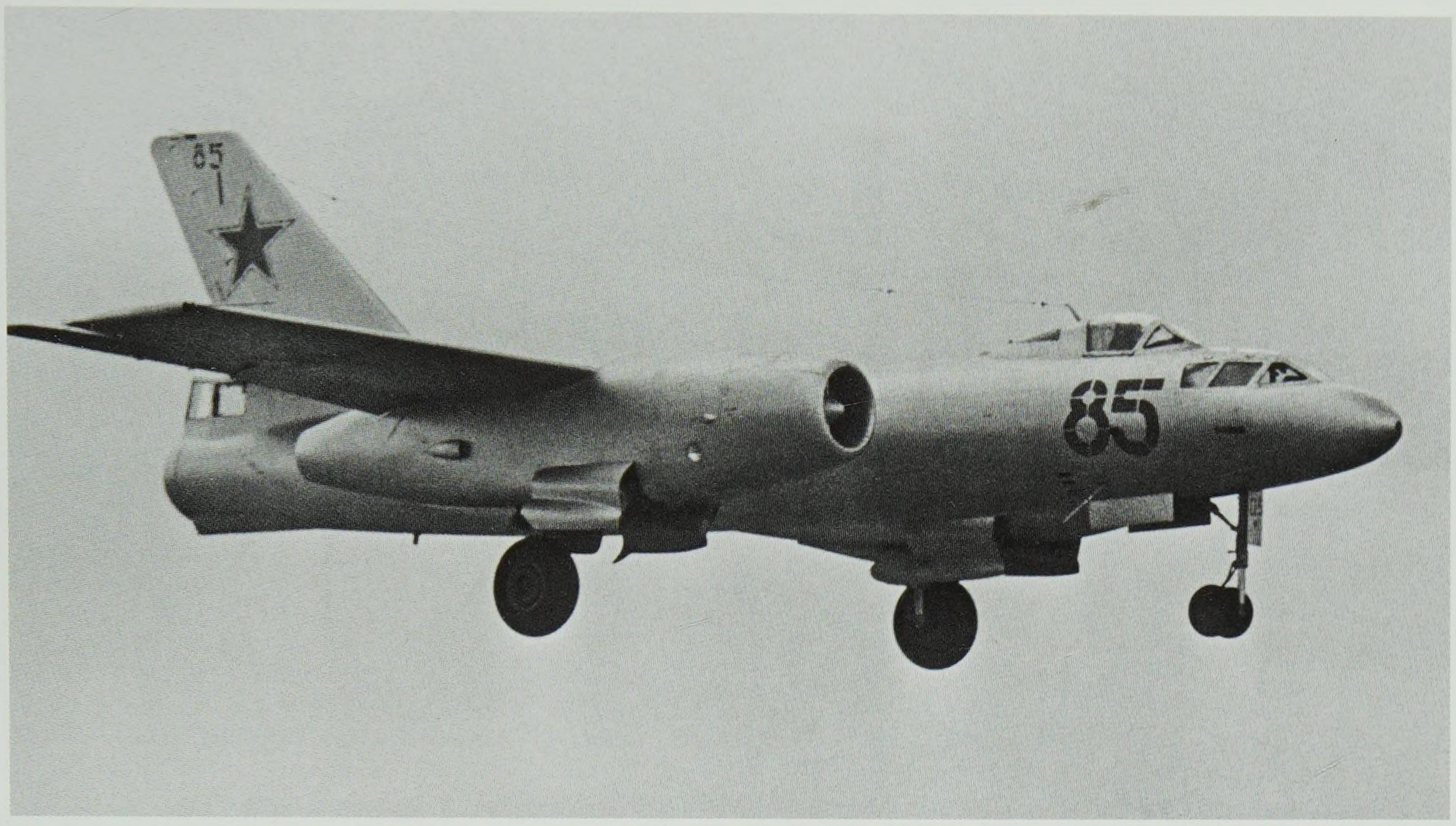
Lt.-Col. Aleksey V. Pashkevich (HSU) and based at Kubinka AB near Moscow was the first unit to master the new fighter. The 324th IAD, then commanded by the famous Col. Ivan N. Kozhedoob (triple HSU), the top-scoring Great Patriotic War ace with 62 'kills' to his credit, was something of a 'showcase division' because Kubinka, the closest fighter base to Moscow, was thus regularly inspected by various top-ranking civil and military officials.

The first ten or fifteen aircraft for the 29th GvIAP arrived on 22nd February 1949. The fighters were promptly reassembled and service trials began, in parallel with preparations for that year's May Day parade in Moscow's Red Square. The parade included no fewer than 45 production MiG-15s, demonstrating the Soviet Union's capabilities as far as modern military aircraft production was concerned. More parade performances followed; on 7th November 1949 (the October Revolution anniversary), 90 *Fagots* flew over Red Square, and on May Day 1950 no fewer than 139 MiG-15s took part in the show.

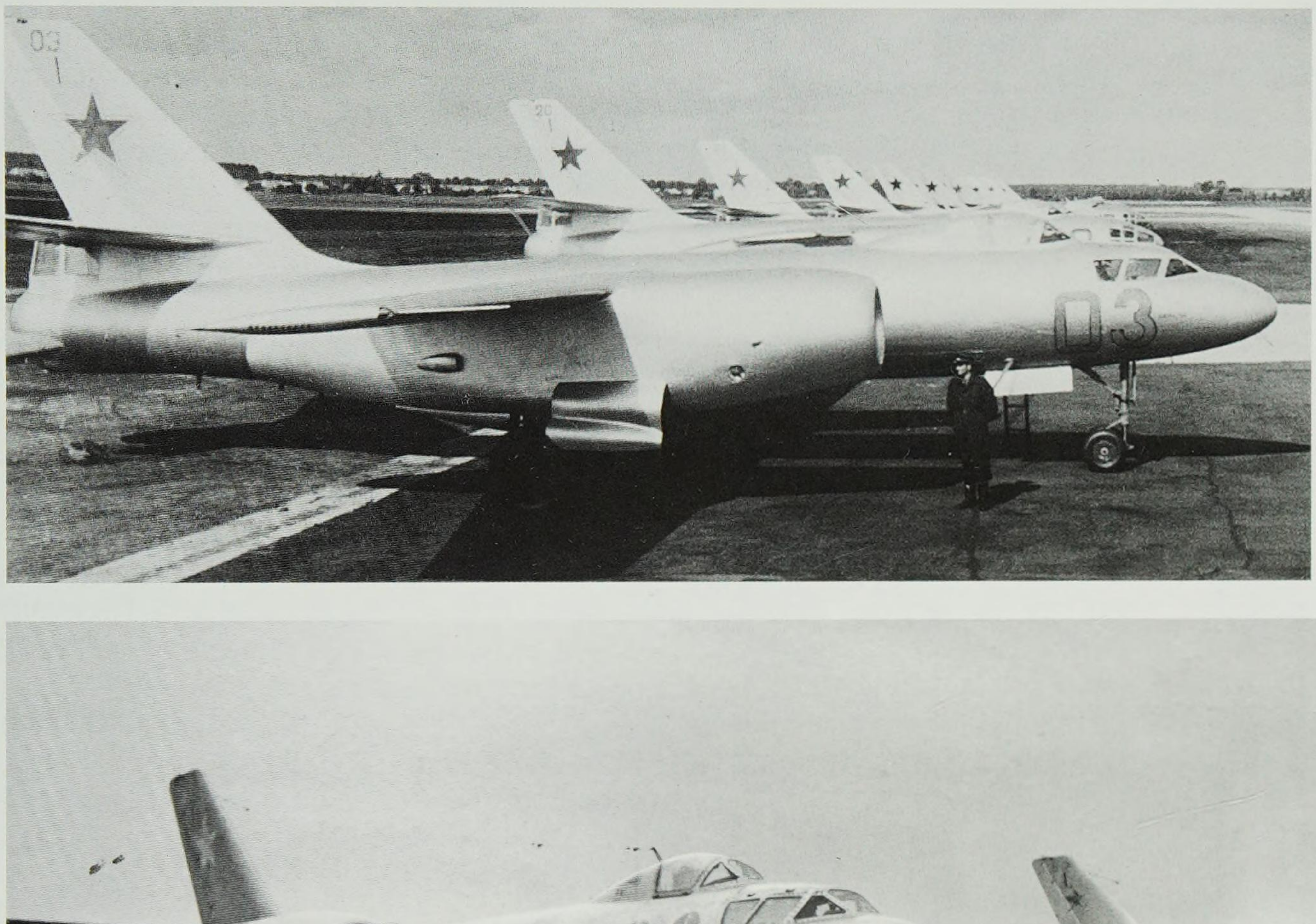
Moreover, in 1950 the first Soviet jet display team was established at Kubinka AB. Led by Lt.-Col. Yevgeniy G. Pepelyayev, soon to become a Korean War ace, it originally flew five *Fagot-Bs* sporting a bright red finish (hence the unofficial name ***Kras**naya **pya**t**yor**ka* –

This shot of an IL-28U coded '99 Red' taxying out for take-off illustrates well the trainer's distinctive nose profile with the stepped windscreen of the instructor's cockpit.



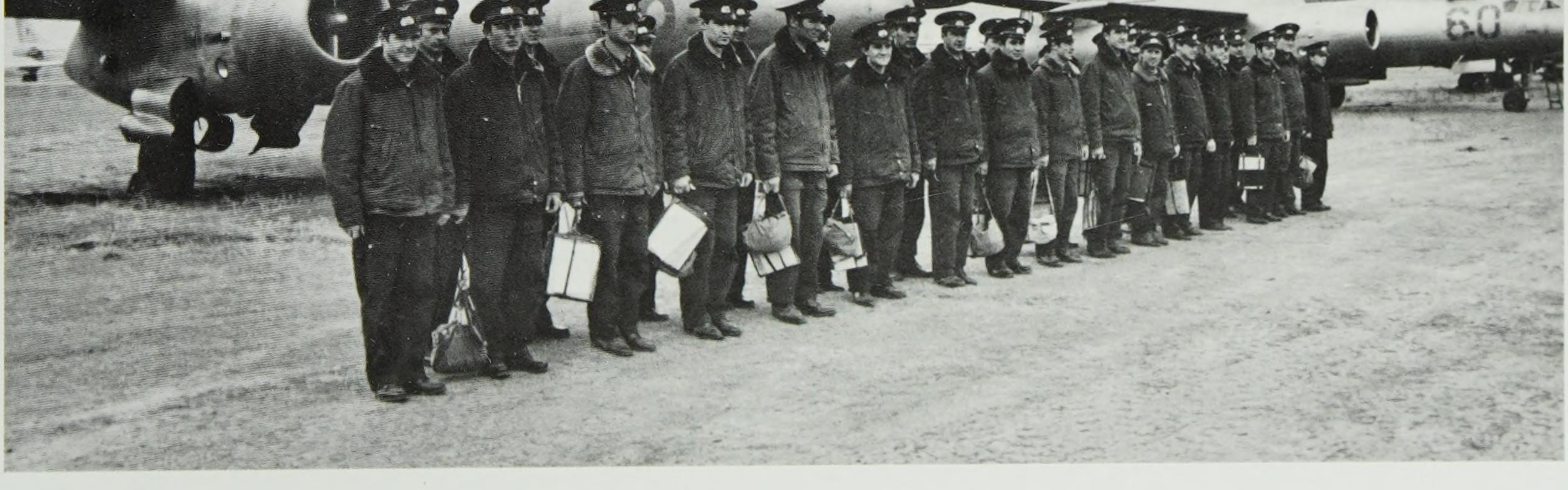


An IL-28U coded '85 Blue' comes in to land. The trainer version was manufactured exclusively by the Moscow factory.



IL-28U '03 Blue' heads a line of at least a dozen IL-28 bombers.

Aircrews line up in front of a row of IL-28Us parked on the grass at a flying college. The Tu-134 airliner in the background may well be a Tu-134Sh navigator trainer.



The flight line of a unit equipped with MiG-15s *sans suffixe*. Until 1955 the star insignia were carried both on the fuselage and on the tail.

Pilots receive a briefing in front of Kuibyshev-built MiG-15*bis* '440 Red'.

the Red Five) and fitted with smoke generator pods.

Apart from the Soviet Union, in the early/mid-1950s several MiG-15 units were permanently deployed abroad (in East Germany and Hungary). The operations of Soviet Tactical Aviation units outside the USSR are described in detail in Chapters 5 and 6.

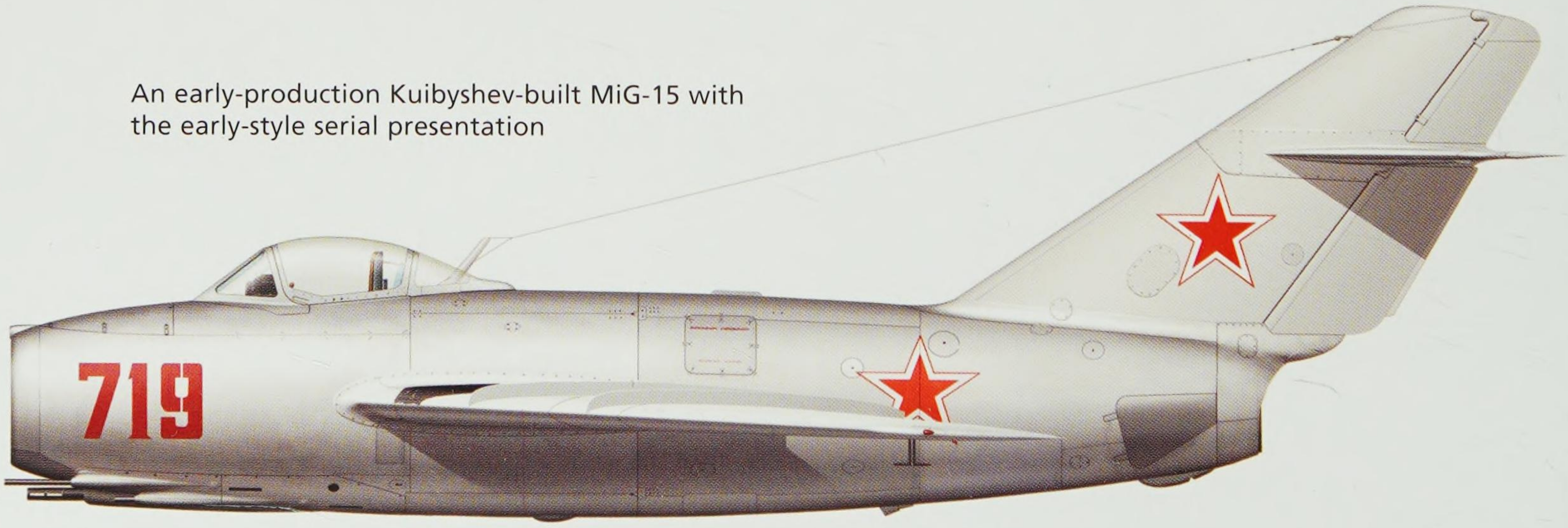
The UTI-MiG-15 *Midget* trainer was fielded almost concurrently with the fighter versions. Its role in the post-war development of the Soviet Air Force deserves special mention. Many young jet pilots in the VVS (and PVO) first-line units and flying colleges were inducted on it. This applies not only to the MiG-15 but also to the MiG-17 and MiG-19 which had no trainer versions. The *Midget* outlasted them all in service; indeed, it remained in service even after the advent of the MiG-21, which did have a trainer version, because the pilots could not transition directly from the piston-engined Yak-18 *Max* trainer to the supersonic MiG-21U *Mongol*.

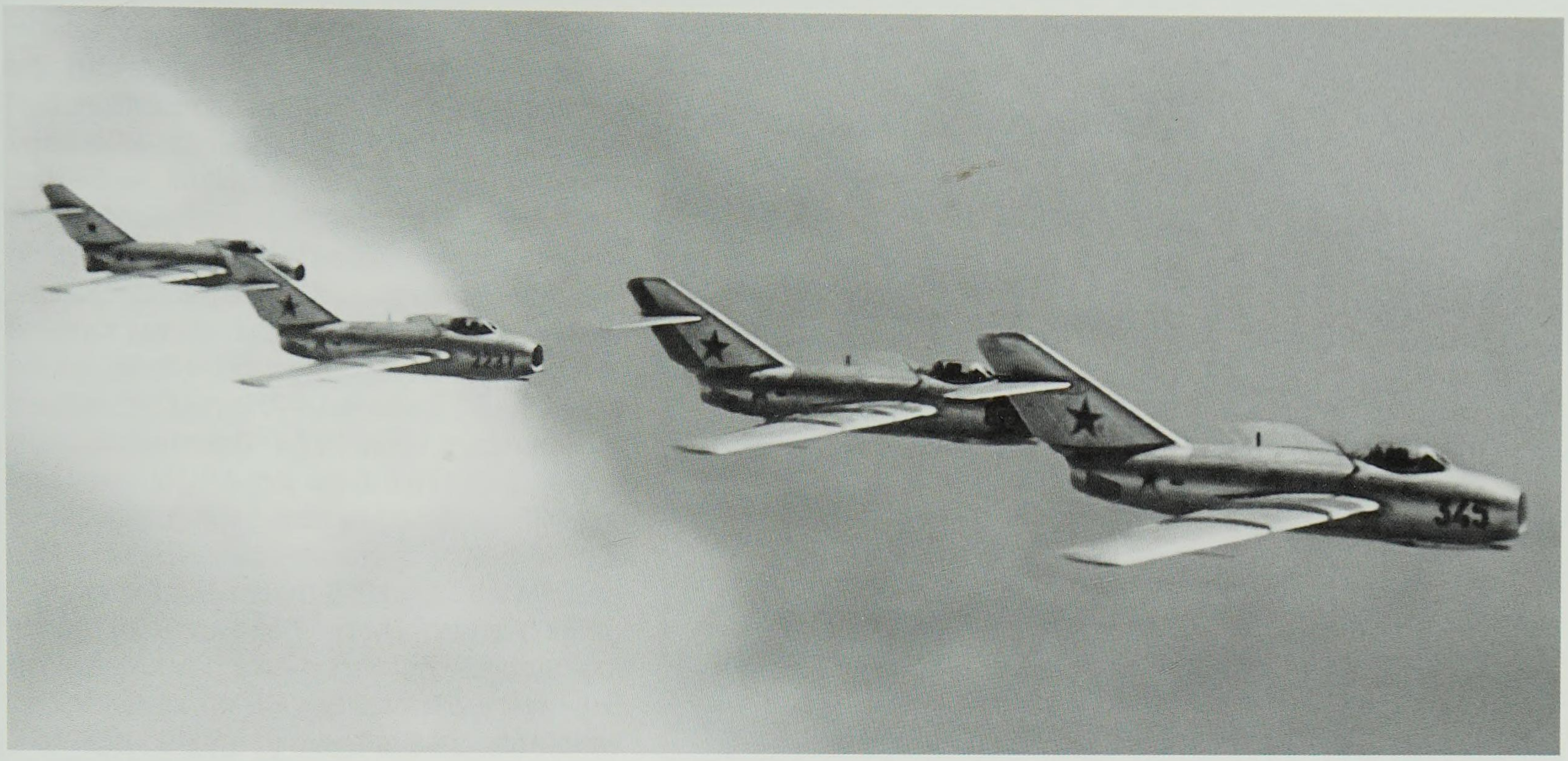
In the 1950s, Soviet MiG-15s had to fire in anger more than once on home ground when dealing with intruding Western reconnaissance aircraft. Most of these incidents occurred in the Soviet Far East and the Baltic republics, where lots of highly sensitive military installations were located.

For example, on 26th December 1950 a US Air Force Boeing RB-29 Superfortress (aka F-13A under the old designation system) intruded into Soviet airspace near the Tyumen'-Oola River in the Far East. Two 523rd IAP *Fagot-As* flown by Capt. Stepan A. Bakhayev and Lt. (SG) N. Kotov attempted to force the intruder down at their home base, but were fired upon by the RB-29's gunners and returned fire, destroying the aircraft.

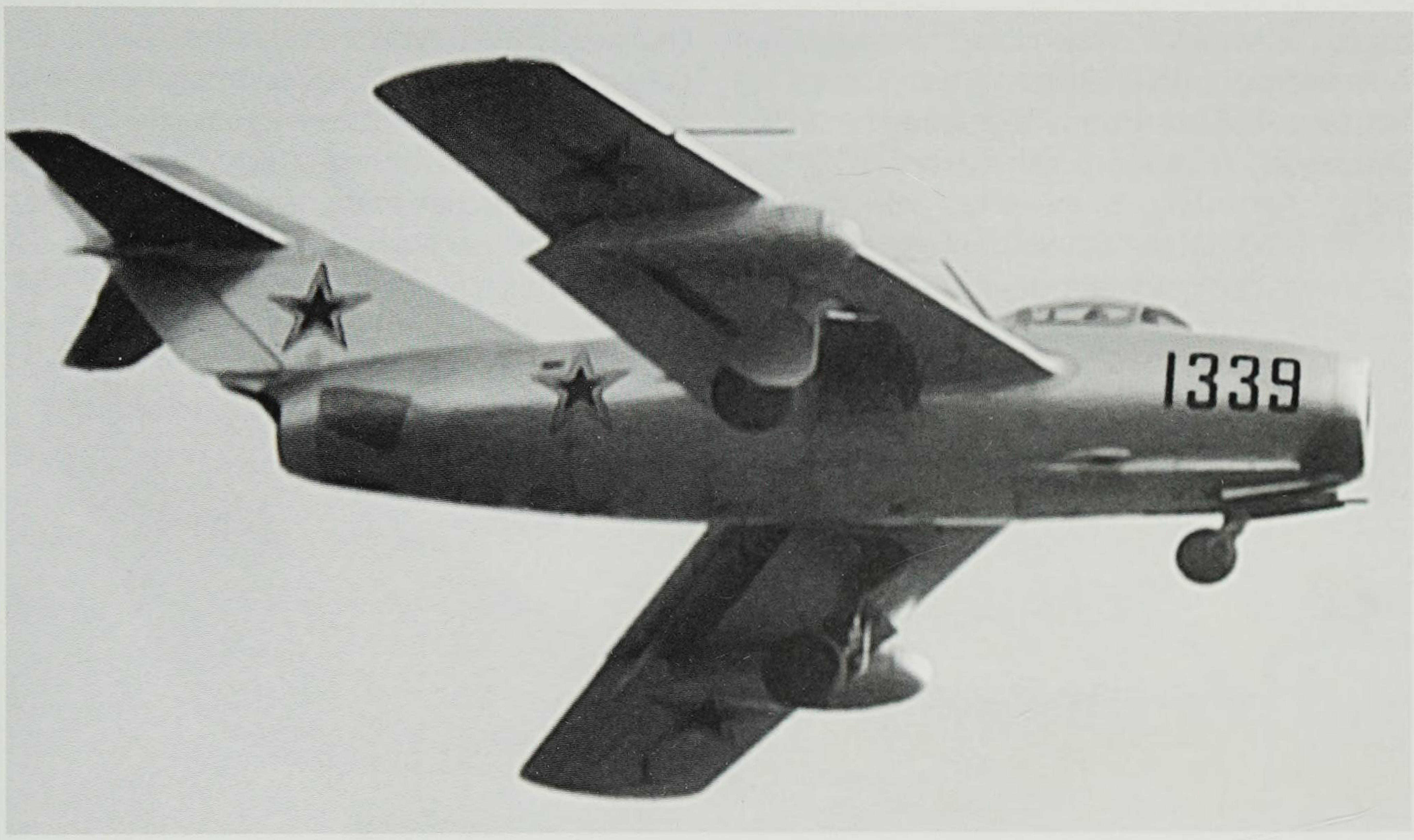
On 11th May 1952 a pair of MiG-15s intercepted a US Navy Martin PBM-5 Mariner flying boat over the Sea of Japan, inflicting minor damage. On 13th June 1952 another RB-29A from the 91st Strategic Reconnaissance Squadron based in Yokota, Japan, was inter-

An early-production Kuibyshev-built MiG-15 with the early-style serial presentation

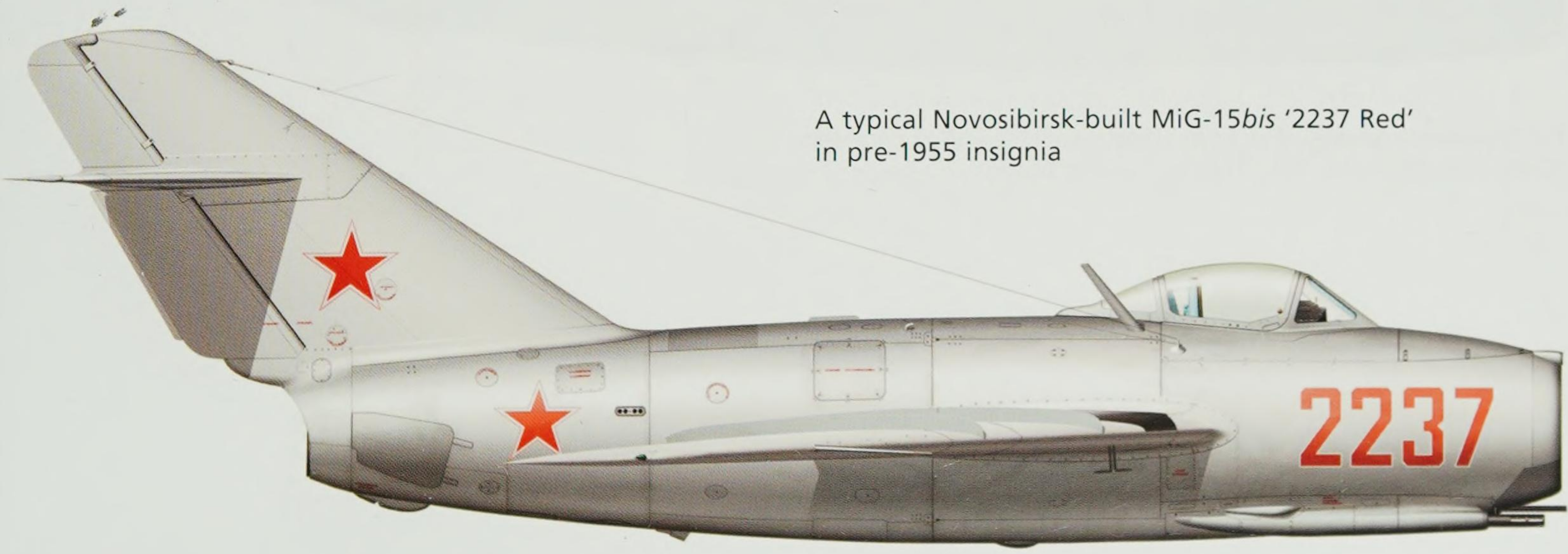




Four MiG-15*bis* fighters in echelon port formation above the clouds. '345 Red' leads the way, followed by '841 Red', '2237 Red' and '355 Red'.



Seen on short finals with fully deployed flaps, MiG-15*bis* '1339 Red' shows the angular serial style used by the Novosibirsk plant.



A typical Novosibirsk-built MiG-15*bis* '2237 Red' in pre-1955 insignia

The early mounts of the 'Red Five' display team from Kubinka. Oddly, these *Fagot-As* carry no serials.

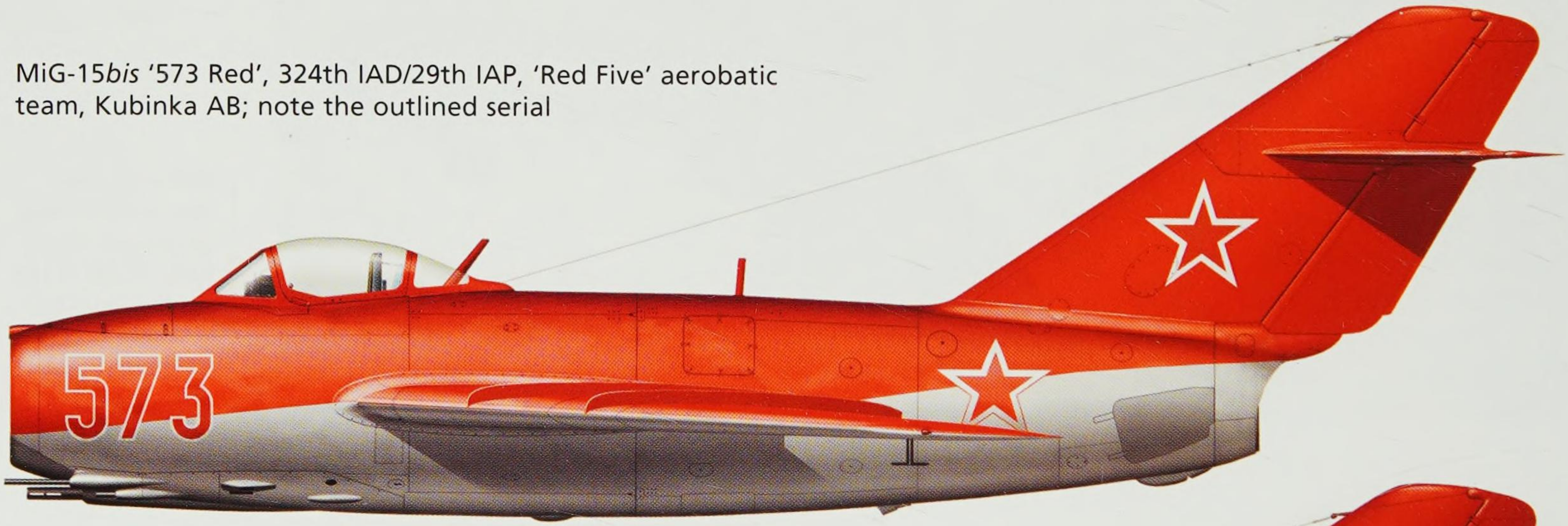
cepted by two MiG-15s piloted by Capt. Oleg P. Fedotov and Lt. (SG) Ivan P. Proskurin 14.5 km (9 miles) from the Soviet coastline while monitoring shipping activity over the Sea of Japan. According to the pilots' reports, the RB-29 fired on the Soviet fighters; the latter returned fire and the spyplane burst into flames, diving into the sea about 29 km (18 miles) from the Japanese coast, taking the crew of 12 with it. On 7th August 1952 two MiG-15s piloted by Lt. (SG) Zeryakov and Lt. (SG) Lesnov shot down a USAF RB-29 over the Kurile Islands; the crew of nine perished.

On 15th March 1953 a USAF Boeing WB-50 Superfortress weather reconnaissance aircraft of the 55th Strategic Reconnaissance Wing/38th SRS was intercepted by a pair of MiG-15s approximately 40 km (25 miles) off the Kamchatka Peninsula. There was a short exchange of fire but the WB-50 got away and the MiGs returned to their base. A week later, a USAF B-50 was attacked by Soviet MiG-15s.

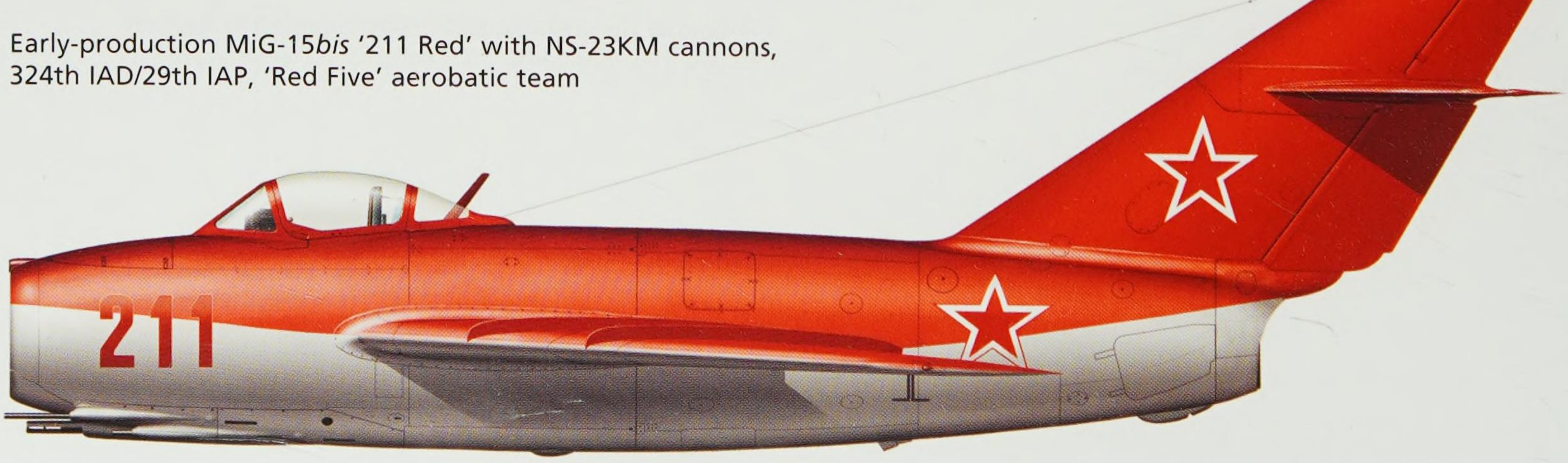
On 15th May 1953 there was an exchange of fire between a MiG-15 and a WB-29 snooping around the Kamchatka Peninsula. The Superfortress escaped, with no casualties on either side.

On 4th September 1954 a US Navy Lockheed P2V-5 Neptune maritime patrol aircraft of VP-19 squadron operating from NAS Atsugi, Japan, was attacked some 64 km (40 miles) off the Soviet coast by two MiG-15s. The aircraft ditched and one crew member lost his life; the others were rescued. Barely a month later, on 7th November, an RB-29

MiG-15*bis* '573 Red', 324th IAD/29th IAP, 'Red Five' aerobatic team, Kubinka AB; note the outlined serial



Early-production MiG-15*bis* '211 Red' with NS-23KM cannons, 324th IAD/29th IAP, 'Red Five' aerobatic team



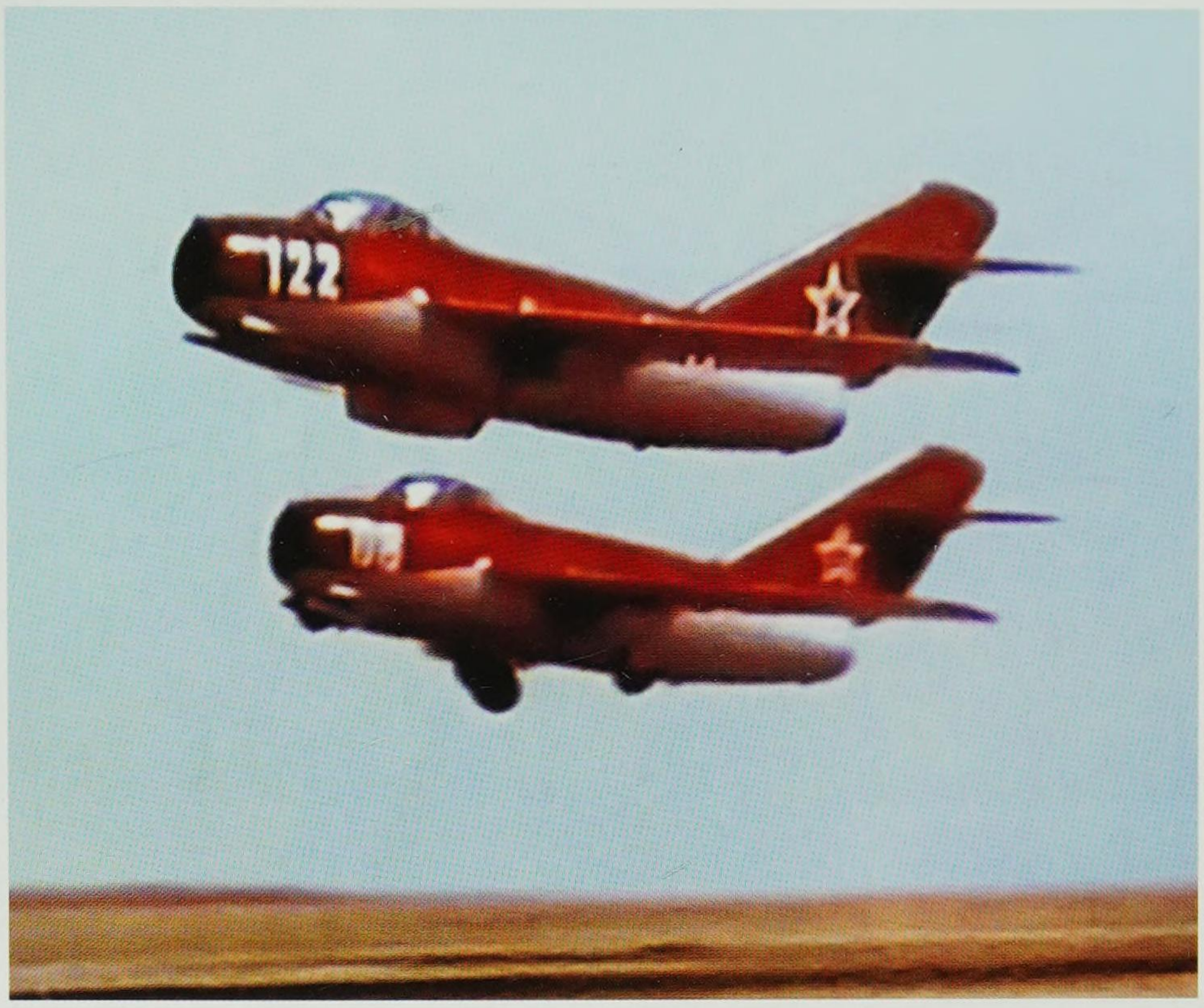
entered Soviet airspace over the Sea of Japan and was attacked by two MiG-15s over Tanfil'yev Island (one of the Kurile Islands). The seriously damaged Superfortress got away but crashed on Hokkaido, Japan.

On 22nd June 1955 another Neptune from VP-19 flying a patrol mission from Kodiak, Alaska, was attacked by a MiG-15 over the Bering Strait. With one engine on fire, the aircraft crash-landed on St. Lawrence Island in the Bering Sea, the crew sustaining injuries. The USA demanded $724,947 in compensation; the USSR finally paid half this amount. On 18th (some sources say 17th) April 1955 two MiG-15s shot down a USAF/4th SRS Boeing RB-47E Stratojet near the Bering Islands. The crew of three were all presumed dead.

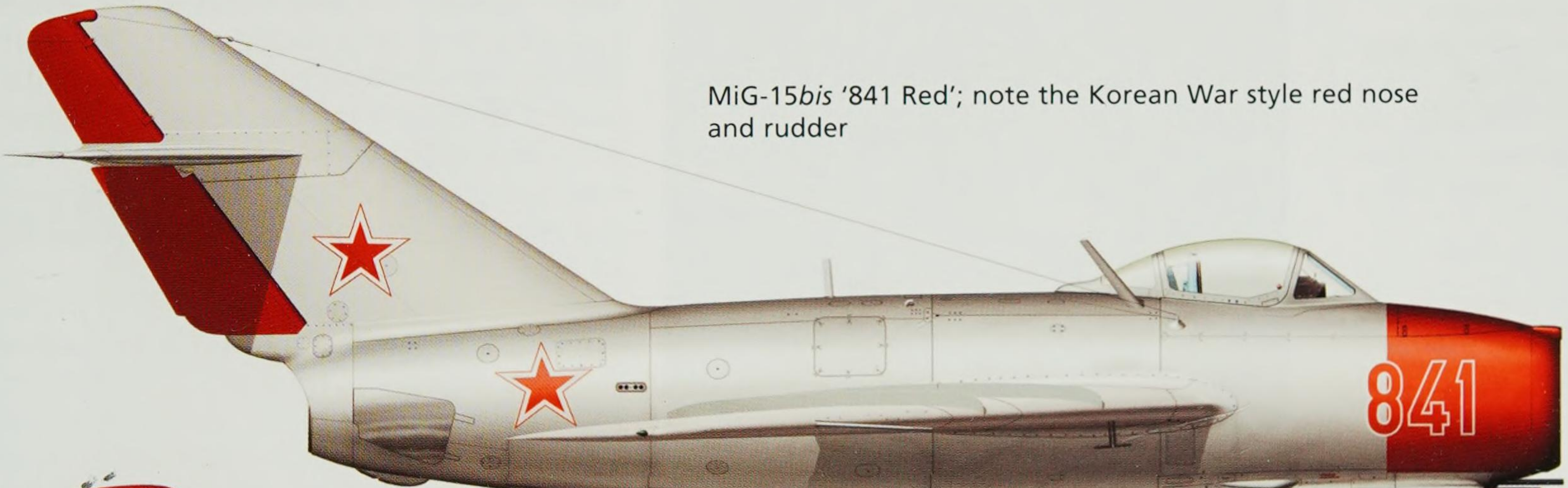
On 1st July 1960 an ERB-47H of the 55th SRW/38th SRS flying over the Barents Sea was downed by a MiG-15 piloted by Vasiliy Polyakov. The Stratojet's co-pilot and navigator survived and were captured; the other crewmembers lost their lives.

Not all such episodes ended well for the MiGs. Sometime between October and December 1950 a US Navy P2V of VP-6 piloted by Arthur Farwell was intercepted at night by four Soviet MiG-15s near Vladivostok in the Far East. The Neptune's tail gunner opened fire, shooting down one of the fighters. This was probably the first incident in this 'secret war'.

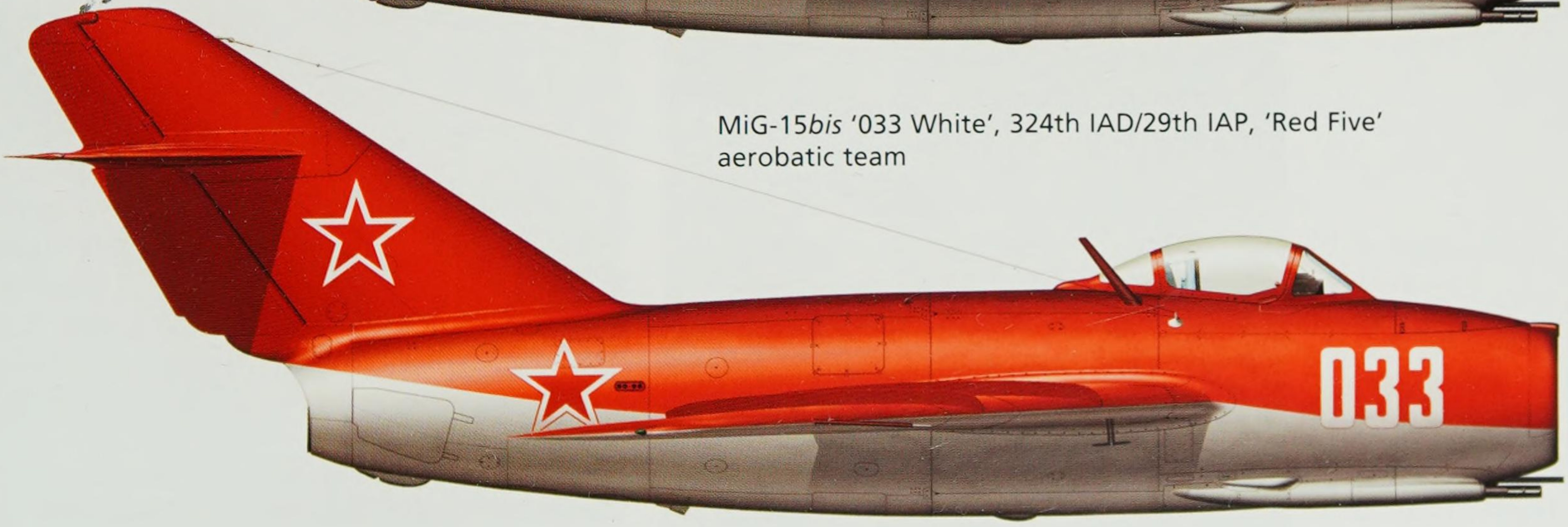
On 27th January 1954 a USAF North American RB-45 Tornado flying over the



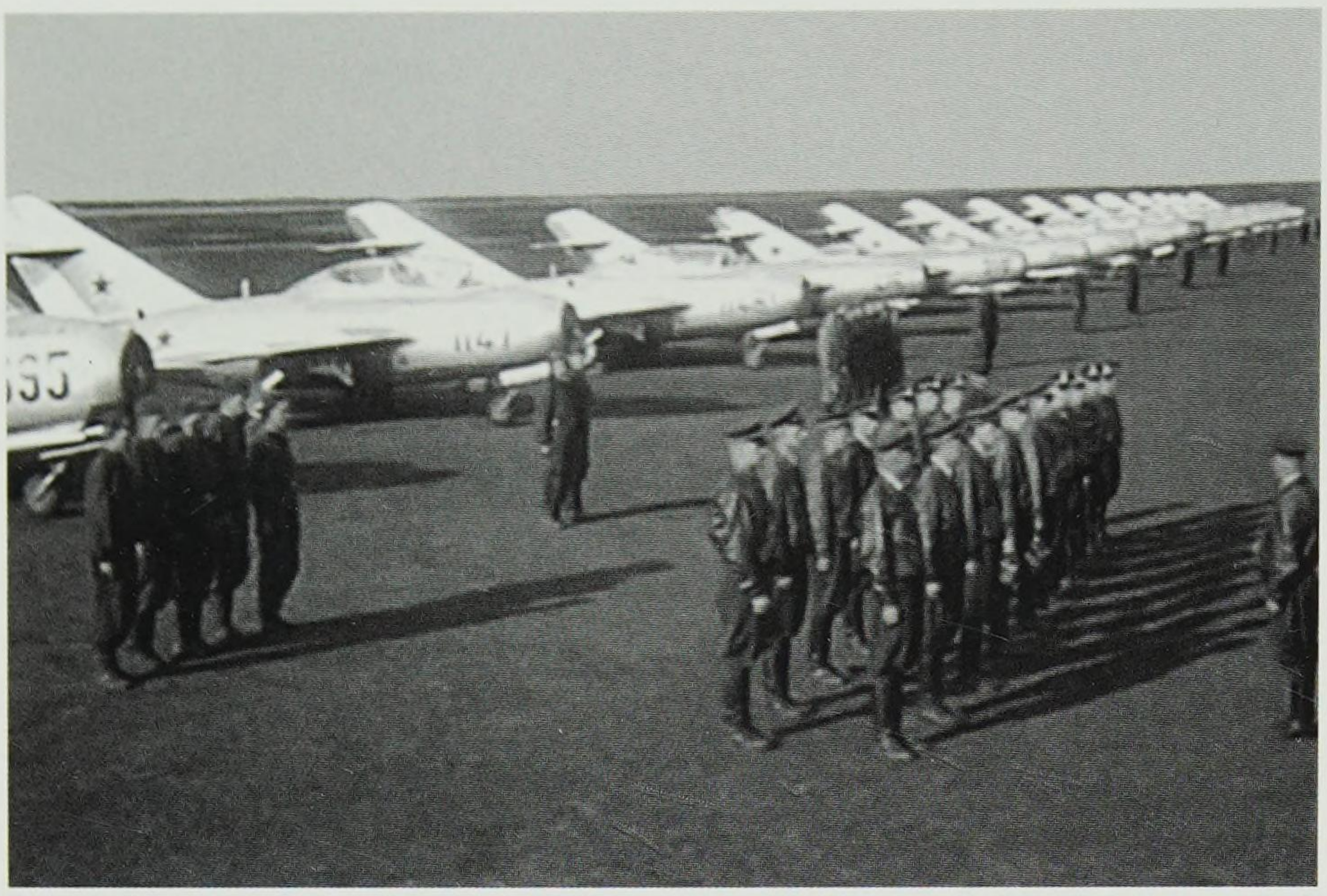
A pair of MiG-15s *sans suffixe* from the 'Red Five' team, '08 White' and '122 White' retracts the gear after take-off.



MiG-15*bis* '841 Red'; note the Korean War style red nose and rudder



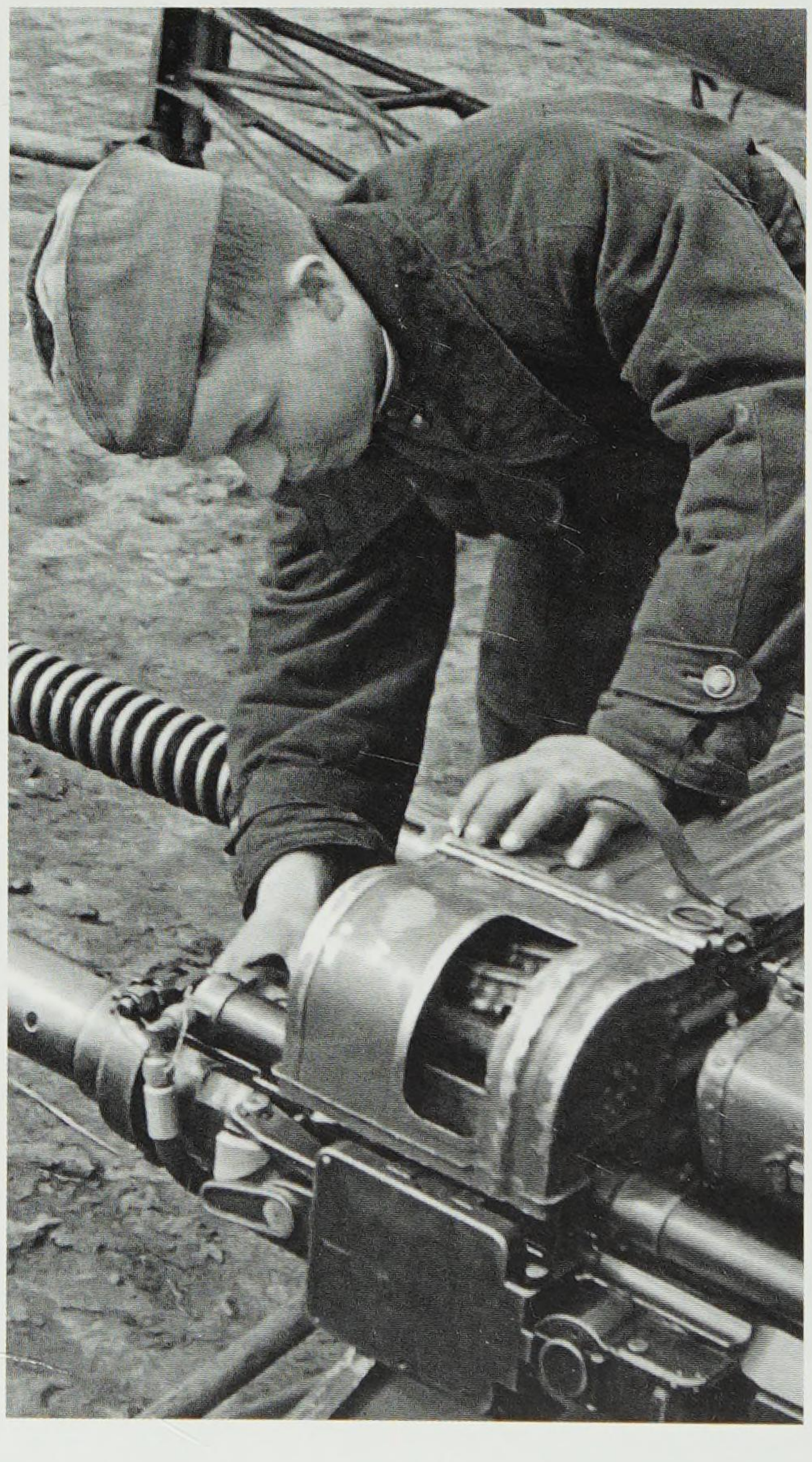
MiG-15*bis* '033 White', 324th IAD/29th IAP, 'Red Five' aerobatic team



MiG-15s on the flight line. '695 Red', a single-seater, is nearest, followed by UTI-MiG-15s '1147^{U} Red' and '1148^{U} Red'.

Yellow Sea with an escort of F-86 Sabres was attacked by eight MiG-15s. In the ensuing dogfight one MiG was shot down by a Sabre. About the same time, a second group of Sabres was fired on by two MiG-15s but evaded the MiGs.

The MiG-15's last known involvement in dealing with intruders into Soviet airspace was on 25th July 1976 when a Finnish-registered Cessna 150 Aerobat crossed the border at low level. Three 431st IAP Su-15TM *Flagon-F* interceptors and a UTI-MiG-15 trainer (!) were directed towards the target but (except for the first Su-15TM) were unable to find it. Eventually the Cessna crash-landed in Soviet territory and the crew was apprehended.



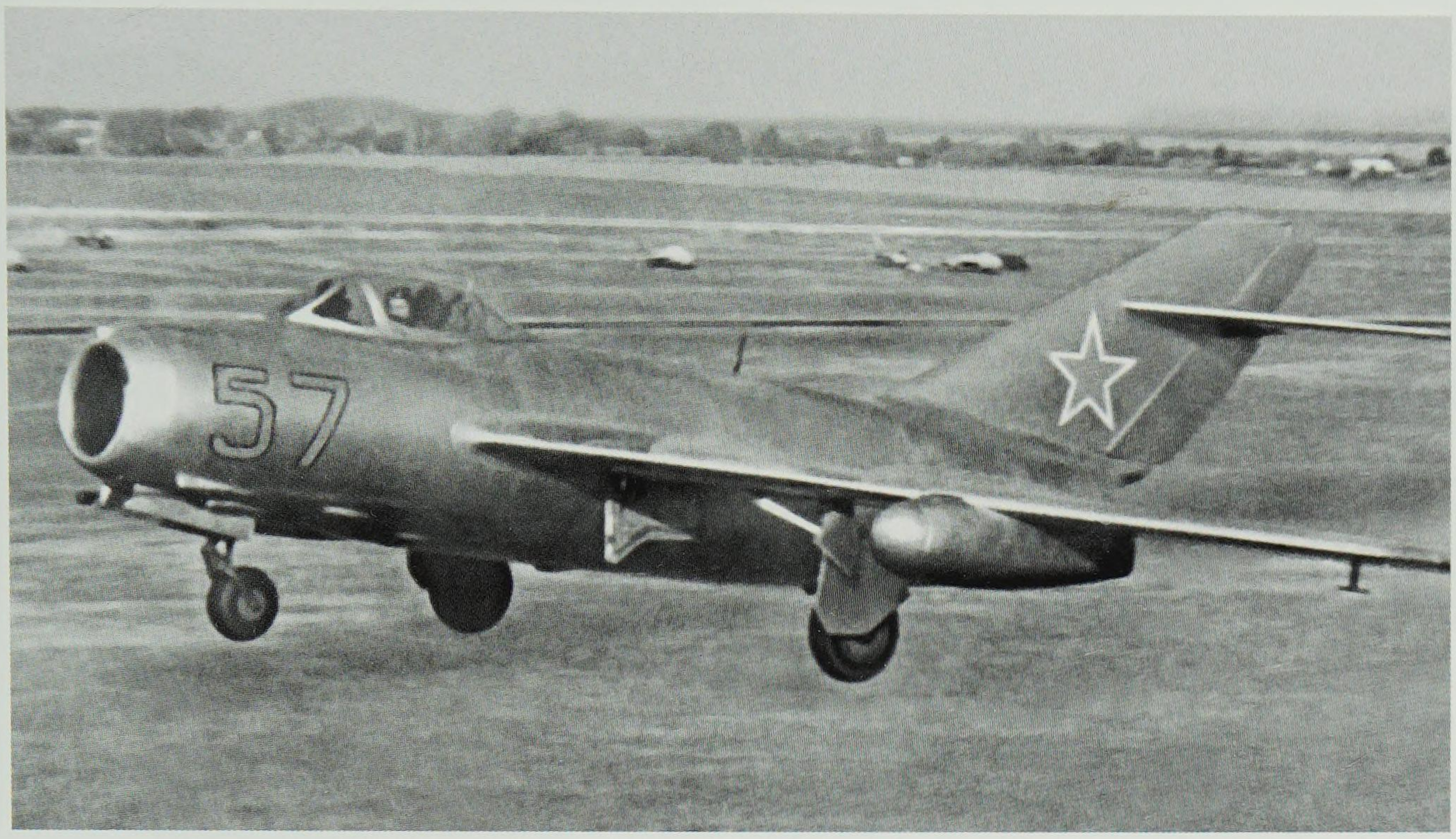
An armourer attends to the cannons of a MiG-15*bis* on their detachable weapons tray.

When the Air Force started re-equipping with the higher-performance MiG-17 (see below), MiG-15s were relegated to the fighter-bomber role. As a fighter-bomber, the MiG-15*bis* was of crucial importance to the VVS. Though never used operationally in this role, it helped train highly skilled cadre and perfect techniques which were used with great success in the 1960s/1980s when dedicated fighter-bombers and attack aircraft, such as the Su-17M and Su-25, entered service (and saw action in the Afghan War).

As for the rival La-15, its service trials commenced on 19th May 1949 in the 196th IAP, which received 20 initial production aircraft as a replacement for the Yak-15s operated previously. The fighter was fast and agile, showing an excellent rate of climb; it was also well armed and easy to maintain. However, as with any new type, manufacturing defects inevitably surfaced in the course of intensive evaluation. The worst problem was unsatisfactory operation of the RD-500 turbojet (a Rolls-Royce Derwent V copy) at full power above 8,000-9,000 m (26,250-29,530 ft). The main and auxiliary hydraulic systems (the latter catered exclusively for the powered ailerons) also functioned unreliably; the mainwheel tyres and brakes suffered from intensive wear and tear, frequently grounding the fighters for repairs.

Apart from these problems affecting virtually the entire La-15 fleet, numerous minor bugs kept cropping up on individual aircraft. These included spontaneous flap deflection at high speed due to airflow suction, rupturing of the canopy perimeter seal and ingress of silica gel dust from the cockpit air filter into the cockpit. The manufacturing standard of the early production machines was inevitably lower than that of the prototypes, which were virtually hand-crafted. The Gor'kiy factory's lack of prior experience with jets was undoubtedly a contributing factor, as was the multitude of changes introduced into the fighter's design in the course of production – even though the factory's staff did their best to rectify the faults.

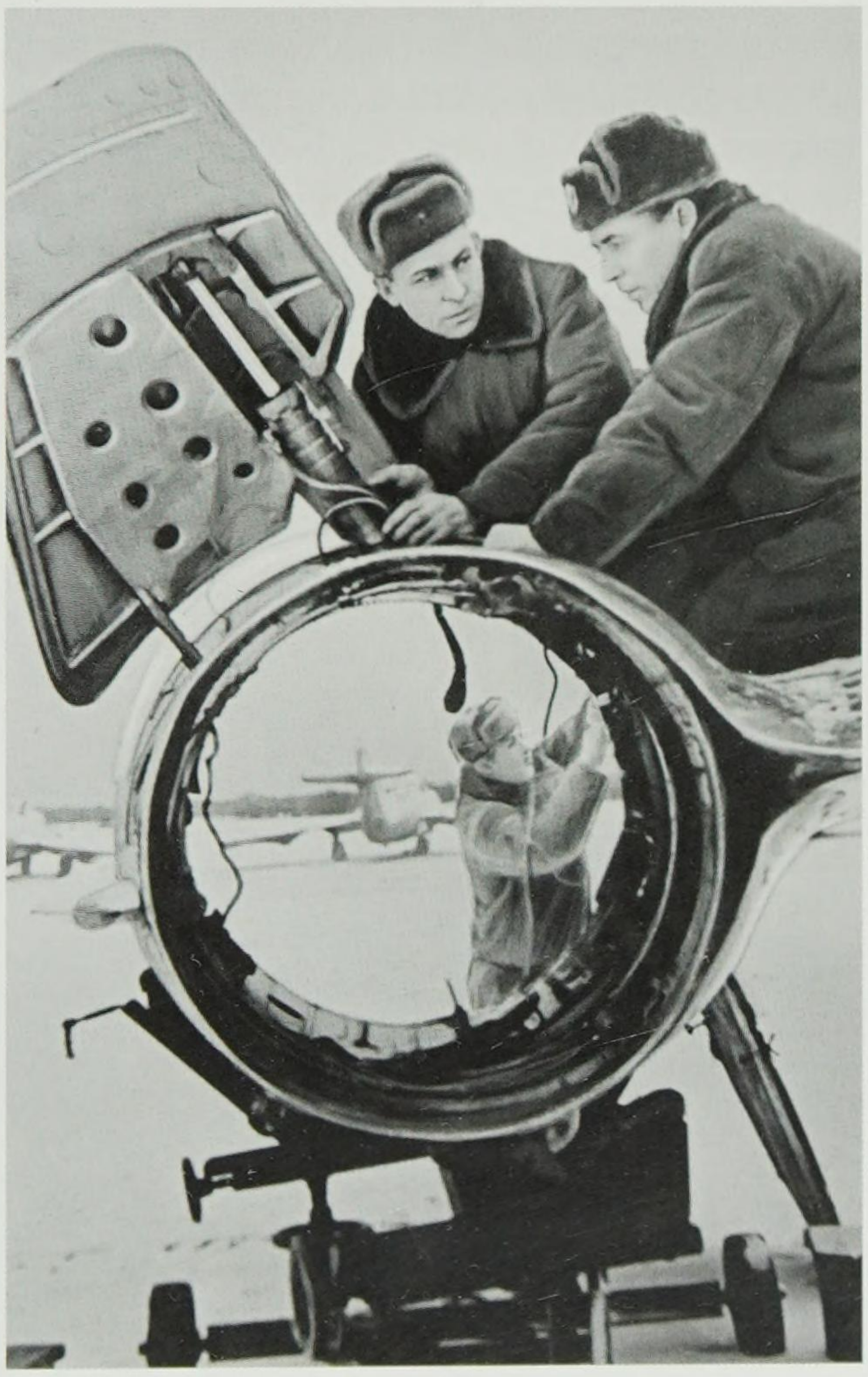
The manufacturing defects resulted in several accidents and incidents. The first loss of a production La-15 occurred on 19th April



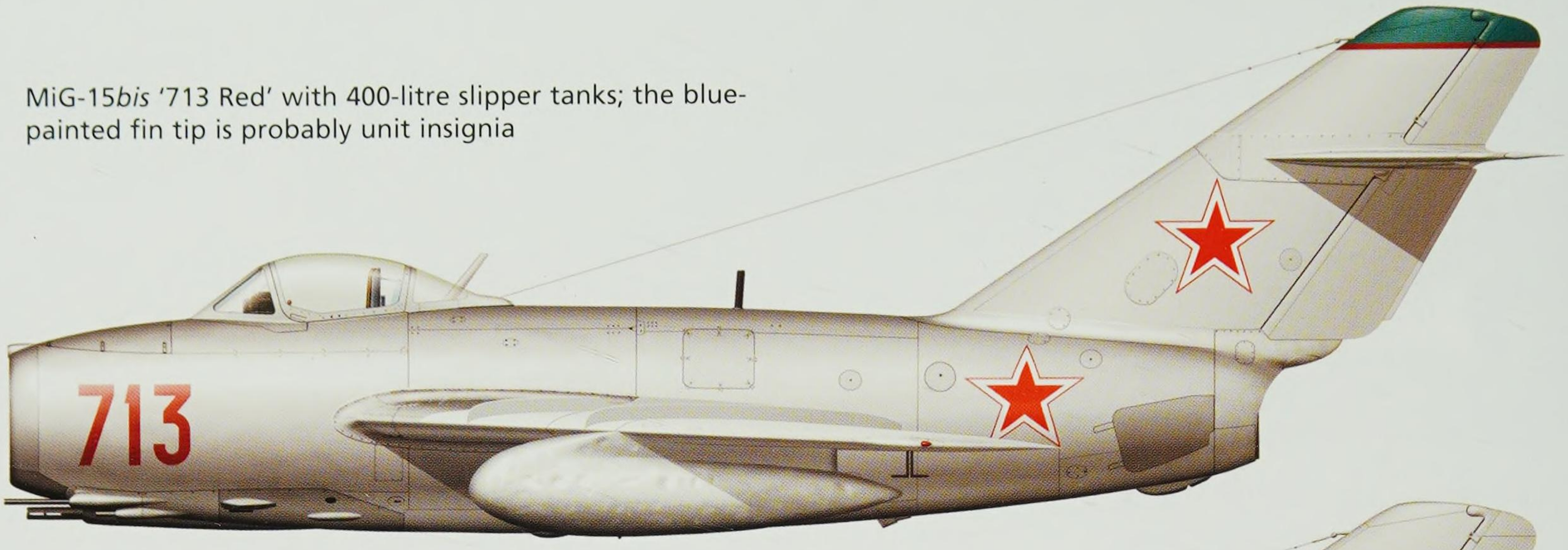
MiG-15*bis* '57 Red' in post-1955 markings is seen here from another aircraft immediately after becoming airborne.

1949, even before the service trials began. As Maj. A. Zotov was making a practice flight for the traditional May Day parade, an engine fire broke out, forcing Zotov to make the first-ever ejection in the Soviet Union; the pilot parachuted to safety and was later awarded the Red Star Order for his bravery. Barely six weeks later another La-15 suffered an engine failure; the pilot Lt. Zagorets did his best to save the fighter but was killed in the ensuing forced landing. On 21st July 1949 the 196th IAP's CO, Guards Col. A. P. Shishkin, crashed fatally during an aerobatics session at Kubinka AB; the cause of the crash was never established with certainty. Lt.-Col. Yevgeniy G. Pepelyayev, who was then the unit's deputy CO, believed that Shishkin had simply initiated a spin from which he could not recover; fighting to the last to regain control of the aircraft, he ejected too late. (Speaking of which, spinning trials held

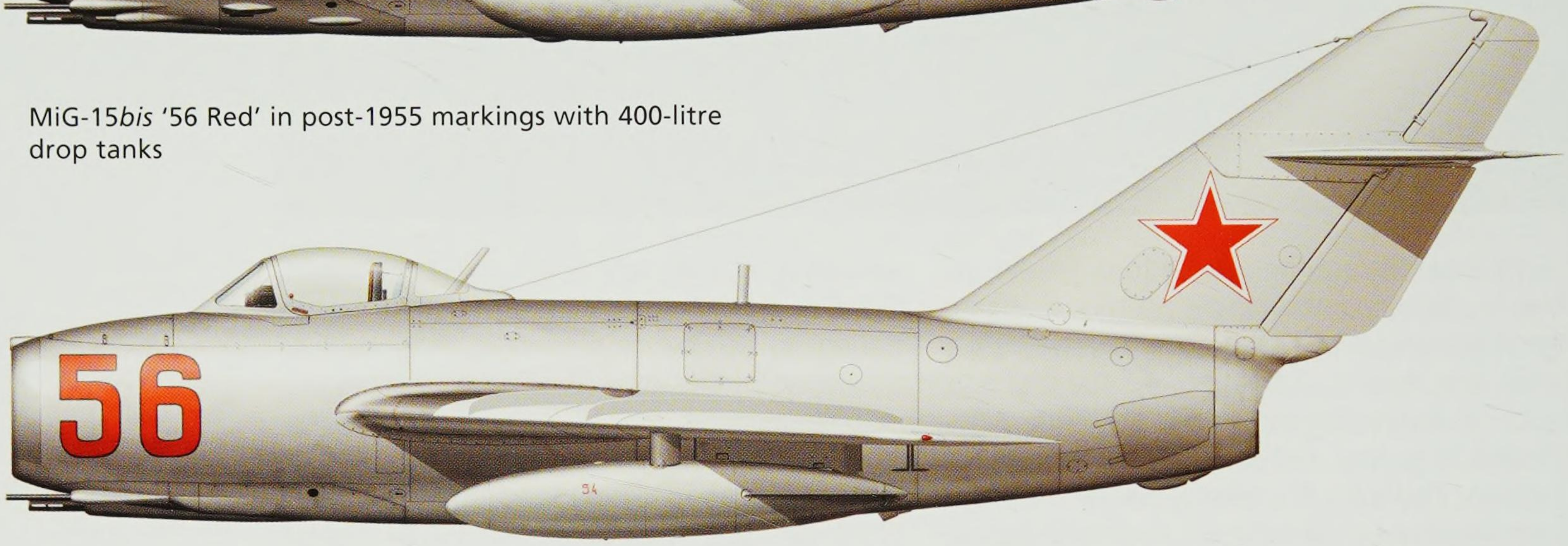
Technician SSgt V. Dorogin fastens the tarpaulin cockpit covers on a MiG-15*bis*.



Technicians at work on a detached MiG-15*bis* rear fuselage resting on a ground handling dolly. Details of the port airbrake are clearly visible.



MiG-15*bis* '713 Red' with 400-litre slipper tanks; the blue-painted fin tip is probably unit insignia

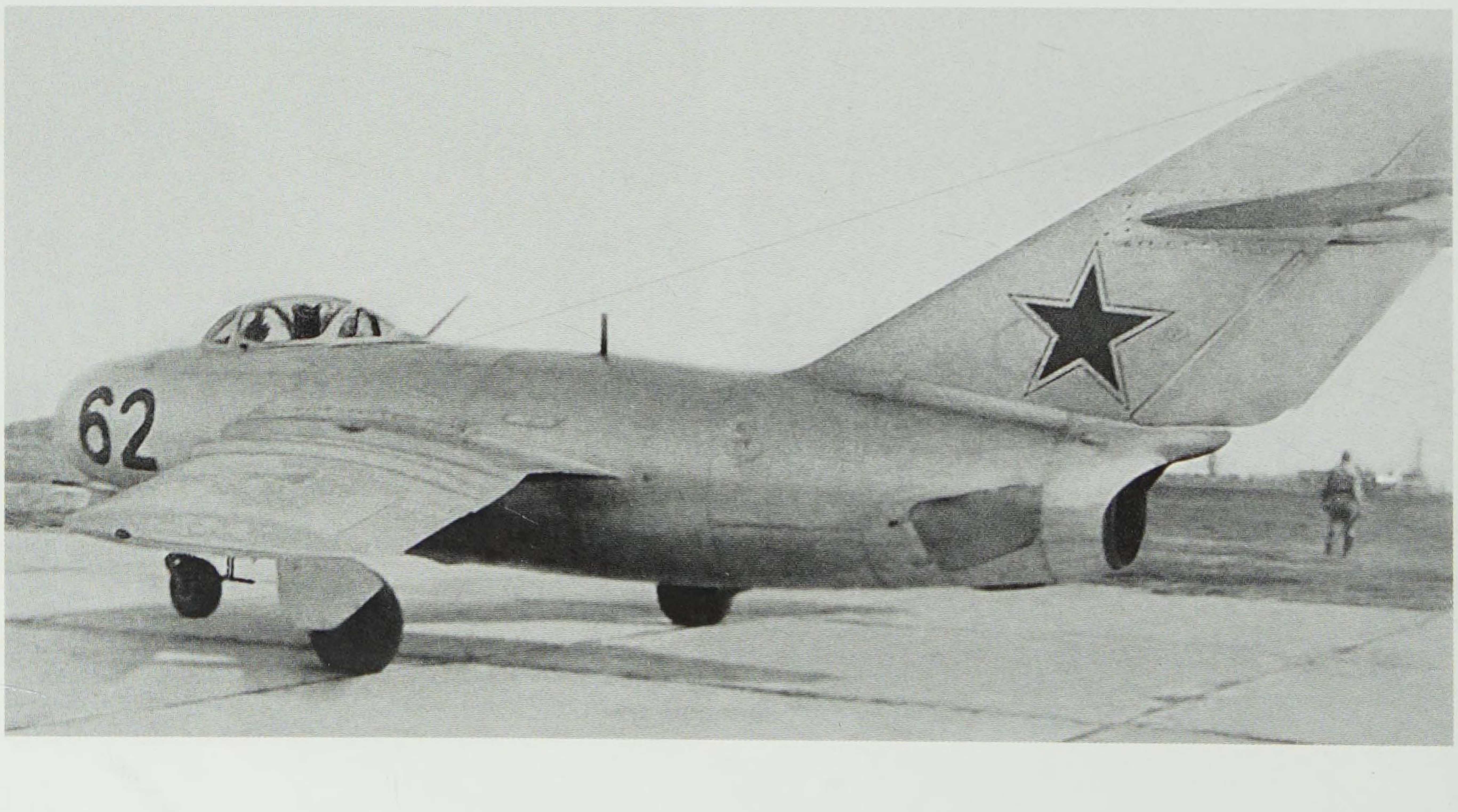


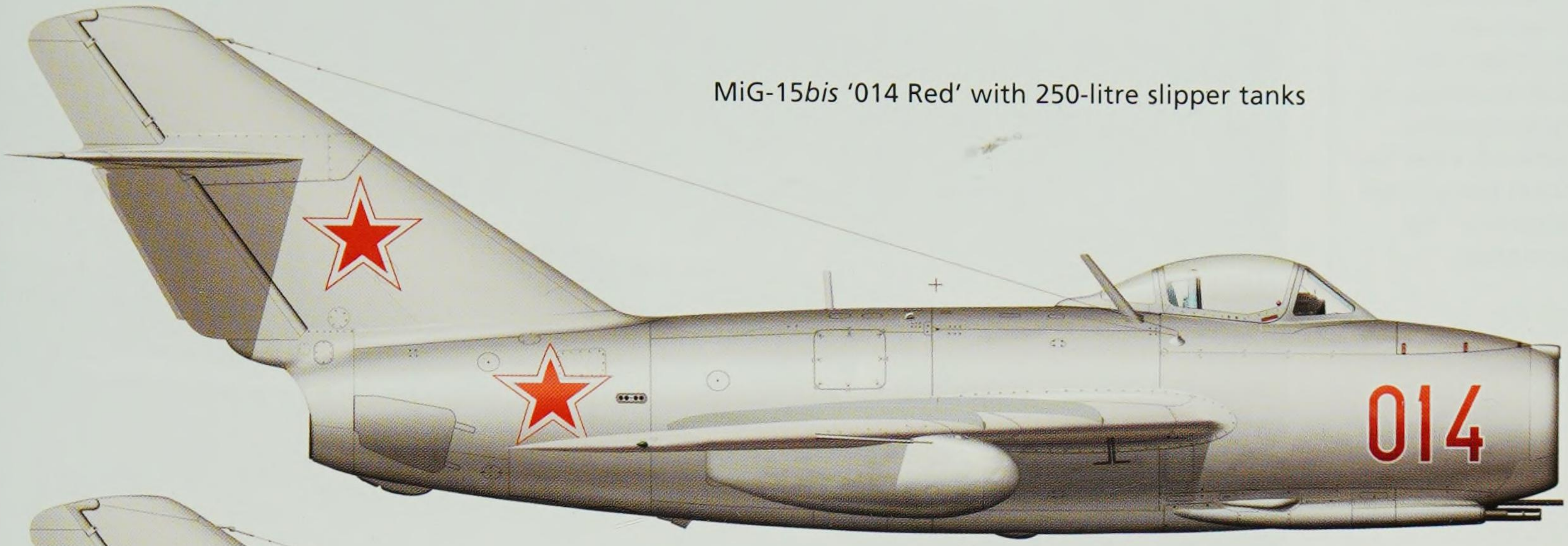
MiG-15*bis* '56 Red' in post-1955 markings with 400-litre drop tanks

by GK NII VVS a while later showed that both the La-15 and the MiG-15 were potentially prone to entering a flat spin – a particularly dangerous variety from which it is hard to recover.)

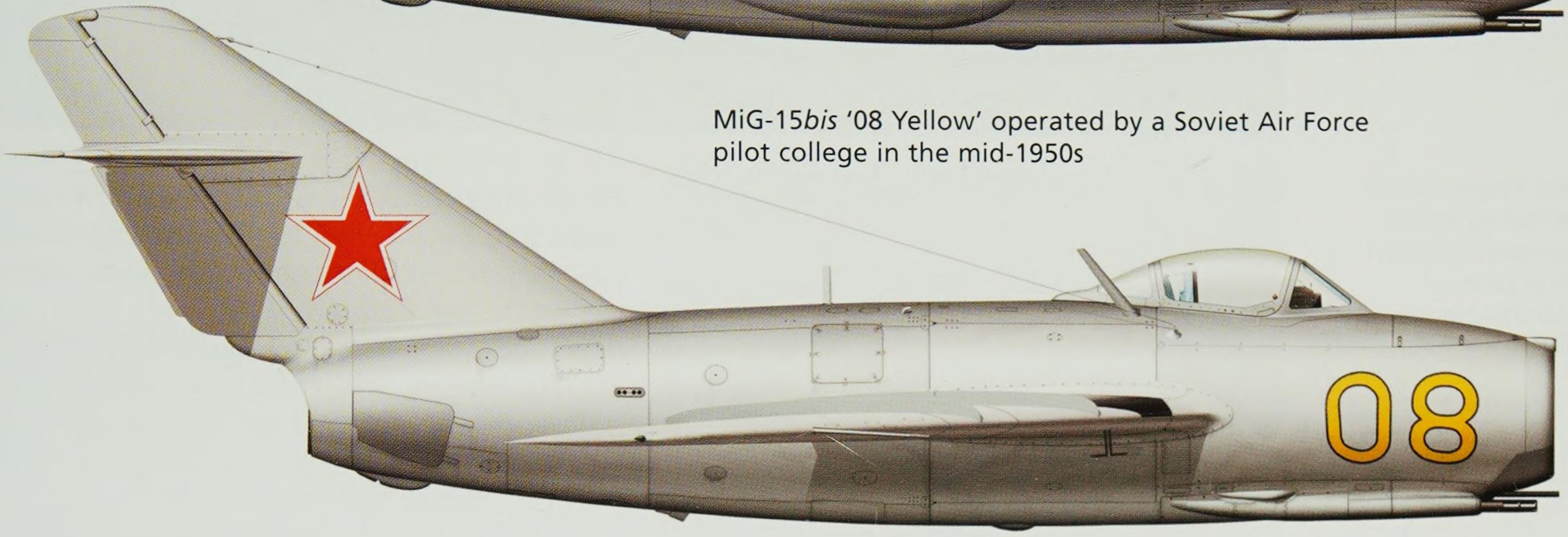
This crash was a case where personal relations played their part. Shishkin was a wartime buddy and protégé of Guards Lt. Gen. Vasiliy I. Stalin, the Soviet leader's son, who was then Commander of the Moscow MD's Air Force component. On learning of his friend's demise Stalin Jr. promptly ordered the service trials of the La-15 to be terminated; the surviving aircraft were to be transferred to PVO units. Thus, even though the pilots of the 196th IAP did fly their La-15s at the Aviation Day flypast at Moscow-Tushino in August 1949, the crash sealed the fighter's fate, prompting the decision to terminate La-15 production at the type's other factory in Saratov.

After 1955 the national insignia were no longer worn on the fuselage, as illustrated by MiG-15*bis* '62 Red'.





MiG-15*bis* '014 Red' with 250-litre slipper tanks

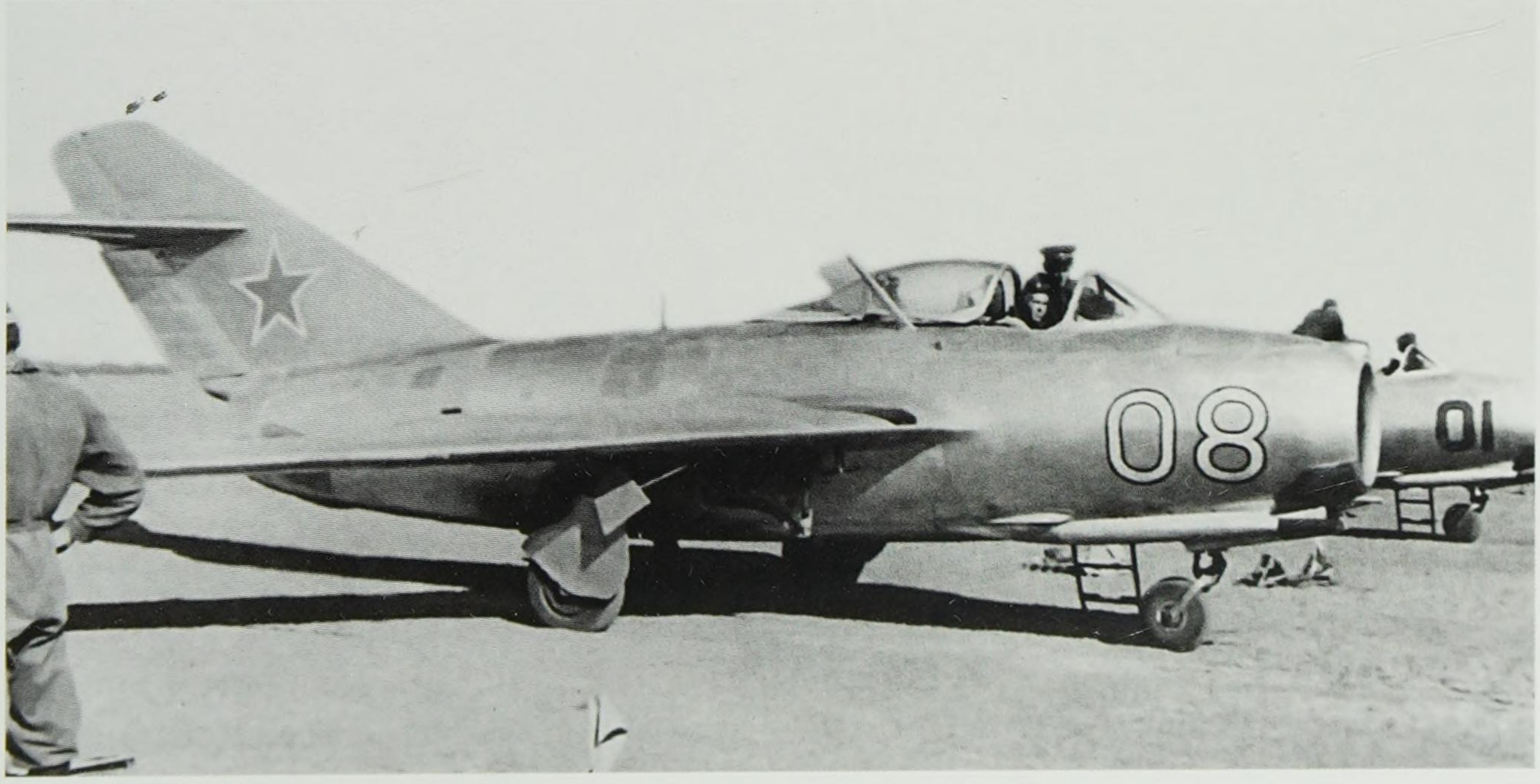


MiG-15*bis* '08 Yellow' operated by a Soviet Air Force pilot college in the mid-1950s

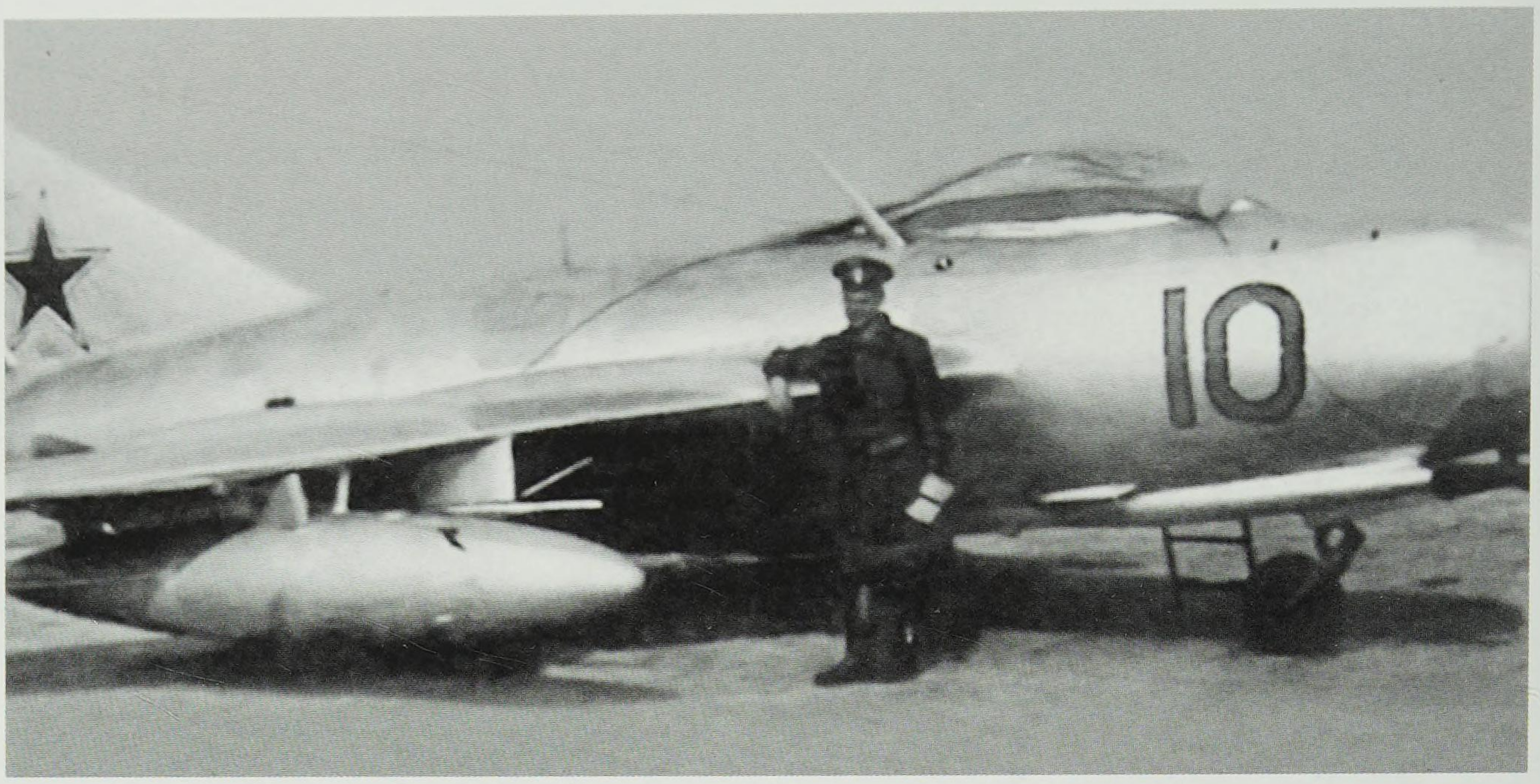
Speaking of which, accident attrition continued in the PVO units to which the *Fantail* had been banished; it seemed that the La-15 was jinxed. It was destined to be the last brainchild of Semyon A. Lavochkin to see production and service – and his only jet aircraft to do so.

In the early 1950s the MiG-15 was gradually replaced as the principal Soviet by the MiG-17 – a derivative of the *Fagot* with the wing sweep increased from 35° to 45° and a redesigned rear fuselage. The original MiG-17 *sans suffixe* (*Fresco-A*) entered service in fairly small numbers and was quickly joined by the MiG-17F *Fresco-C* powered by an afterburning engine. (The radar-equipped interceptor versions were operated by the PVO and lie outside the scope of this book.)

The MiG-17 possessed such virtues as rugged reliability and ease of maintenance –



Yellow-coded *Fagots* were rare; MiG-15*bis* '08 Yellow' is an example.



A pilot poses for a photo with MiG-15*bis* '10 Blue' modified to fighter-bomber standard; note the rocket launch rails inboard of the drop tanks.

Two *Fagot-Bs* converted to fighter-bomber standard drop pairs of FAB-250 bombs.

valuable assets when operating from forward bases with limited ground support equipment. It was also fairly easy to fly, presenting no problems for the average pilot, and pilots who were familiar with the *Fagot* transitioned to the *Fresco* without any trouble.

For the next six to eight years the *Fresco-A/C* was used in its main roles as a tactical and escort fighter. In so doing the MiG-17 even operated in a nuclear environment once. In September 1954 the 119th IAD comprising the 86th GvIAP, 157th IAP and 947th IAP, all flying MiG-17s, relocated from Tiraspol' (Moldavia) to the Ural Mountains to take part in the aforementioned tactical nuclear exercise at the Totskoye range (Operation *Snezhok*).

Since the MiG-17 was the Soviet Air Force's principal fighter type in the mid-1950s, its pilots shouldered the main workload of defending the Soviet borders against incursions by Western aircraft (chiefly reconnaissance aircraft) which were quite common. The first instance when Soviet MiG-17 fired their guns in anger was probably 29th July 1953. On that day a USAF RB-50G entered Soviet airspace 130 km (70 nm) south of Gamov Cape near Vladivostok. 17 minutes later it was intercepted by two 88th GvIAP MiG-17s flown by Capt. Aleksandr D. Rybakov and Lt. (SG) Yuriy M. Yablonovskiy. Refusing to obey 'follow me' signals, the intruder opened fire first, damaging Rybakov's aircraft, and was shot down into the Sea of Japan five minutes later.

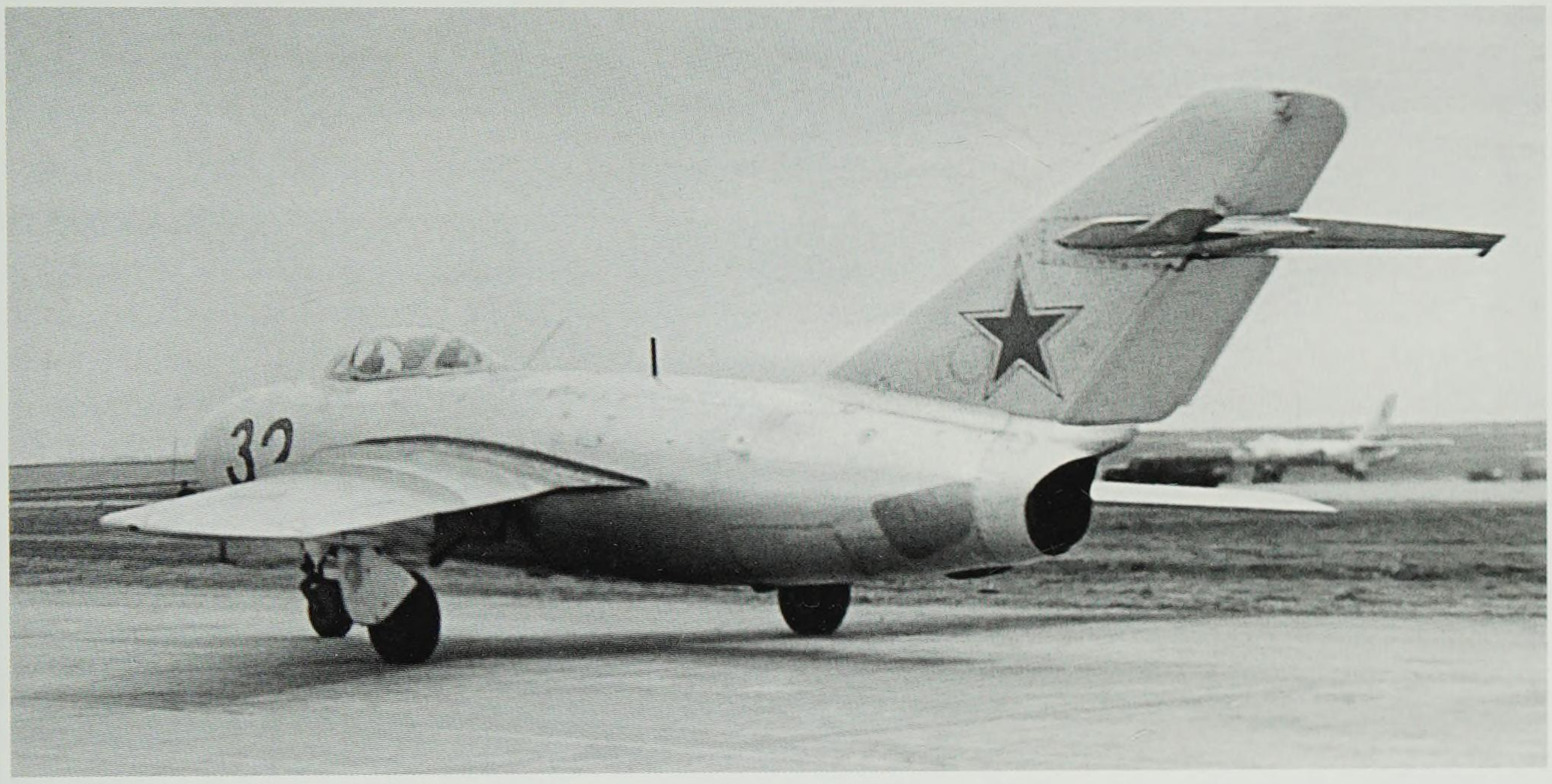
In the mid-/late-1950s the Soviet Air Force started re-equipping with fighters armed with both cannons and air-to-air missiles. The Attack Aviation branch (ShA – *Shtoormo**va**ya avi**ah**tsiya*) was abolished and replaced by the Fighter-Bomber Aviation (IBA – *Istre**bit**el'no-bombardi**rov**ochnaya avi**ah**tsiya*) whose formation began in May 1957. Its aircraft were capable of delivering both conventional weapons and tactical nukes. To ensure accurate navigation and precise weapons delivery military aircraft began to be outfitted with various electronic systems, and instrument landing systems began making their appearance at military bases.

In the mid-1950s the fighter regiments flying the MiG-17F started re-equipping with the supersonic MiG-19S *Farmer-C* day fighter. However, this type did not make a distinguished career with the Air Force; anyway, most of the Soviet MiG-19s were operated by the PVO, not the Tactical Aviation.

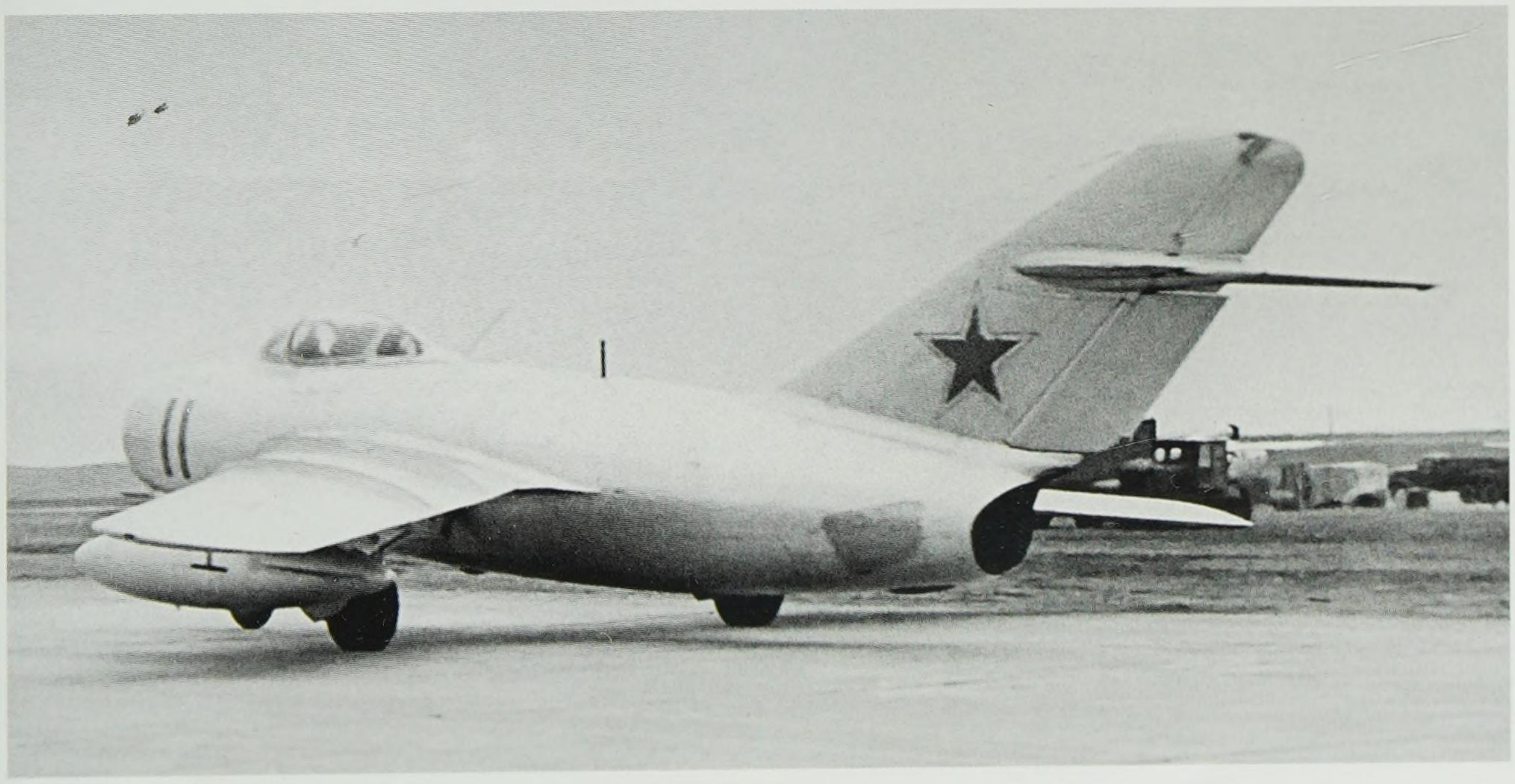
The incipient Cold War kicked off the arms race between the East and the West, a costly and exhausting competition. In the 1950s the Soviet Union developed and tested several dozen new combat aircraft, not all of which were to see production and service with the Soviet Air Force. As new types were fielded, the older hardware they displaced was transferred to the Air Force's pilot colleges – or to aviation technical colleges and junior aviation specialist schools as ground instructional airframes.

When substantiating the proposed new military aircraft purchase plan for 1956, the then C-in-C of the Soviet Air Force Air Marshal Pavel F. Zhigarev said he saw no point in building any more IL-28 straight-wing tactical bombers, arguing that the *Beagle*'s performance, especially its speed, did not meet the requirements for a contemporary tactical bomber. He tasked the Ministry of Aircraft Industry with testing and debugging the new transonic and supersonic tactical bombers under development at the time – the Yak-26 *Flashlight-B* created by Aleksandr S. Yakovlev's OKB-115, the IL-54 *Blowlamp* created by Sergey V. Il'yushin's OKB-240 and the Tu-98 *Finback* created by Andrey N. Tupolev's OKB-156 – by the end of 1955. As for the ShA, the Commander-in-Chief perceived the need to replace the piston-engined IL-10/IL-10M, which was long overdue for retirement, with the twin-turbojet IL-40 *Brawny* attack aircraft. He proposed ordering an initial batch of 50 such aircraft *'having good armour protection, a wide speed range of 300-985 km/h [186-612 mph] and quite potent rocket and cannon attack armament'*. This batch was to be used *'for large-scale evaluation with a view to ascertaining the aircraft's tactical capability and the expediency of having such an aircraft in the Soviet Army's inventory'*. Furthermore, the IL-40 was to serve as the basis for a version with an elevating cannon battery, as well as the IL-40R reconnaissance version and the IL-40U dual-control trainer, which were to be submitted for state acceptance trials in due course.

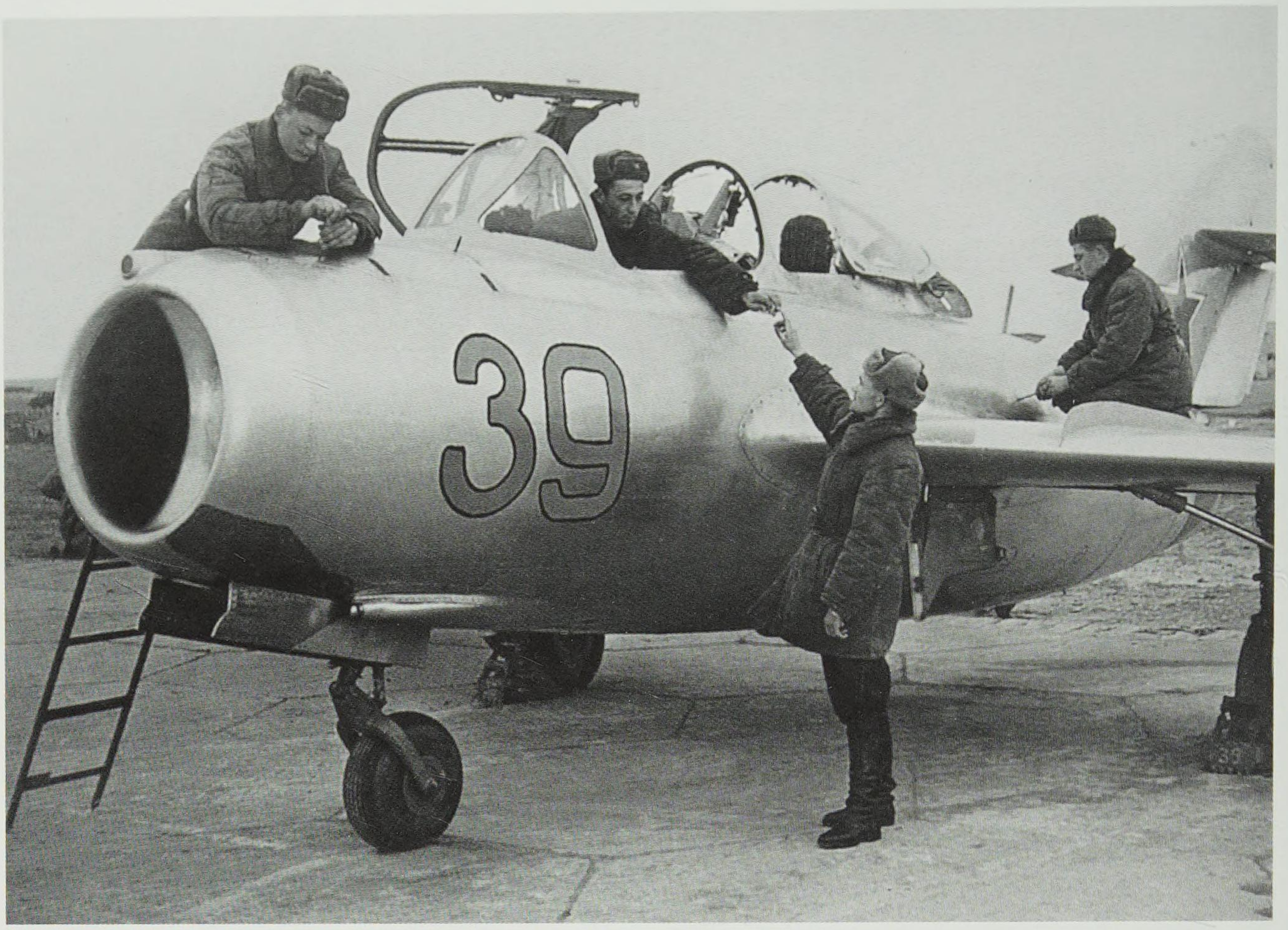
Regarding tactical fighters, the situation was this: the only new type that had com-



MiG-15*bis* '32 Red' converted to fighter-bomber configuration taxies past an IL-28 bomber.



'11 Red', another 'production' MiG-15*bis* fighter-bomber. This one appears to be a bit tail-heavy.

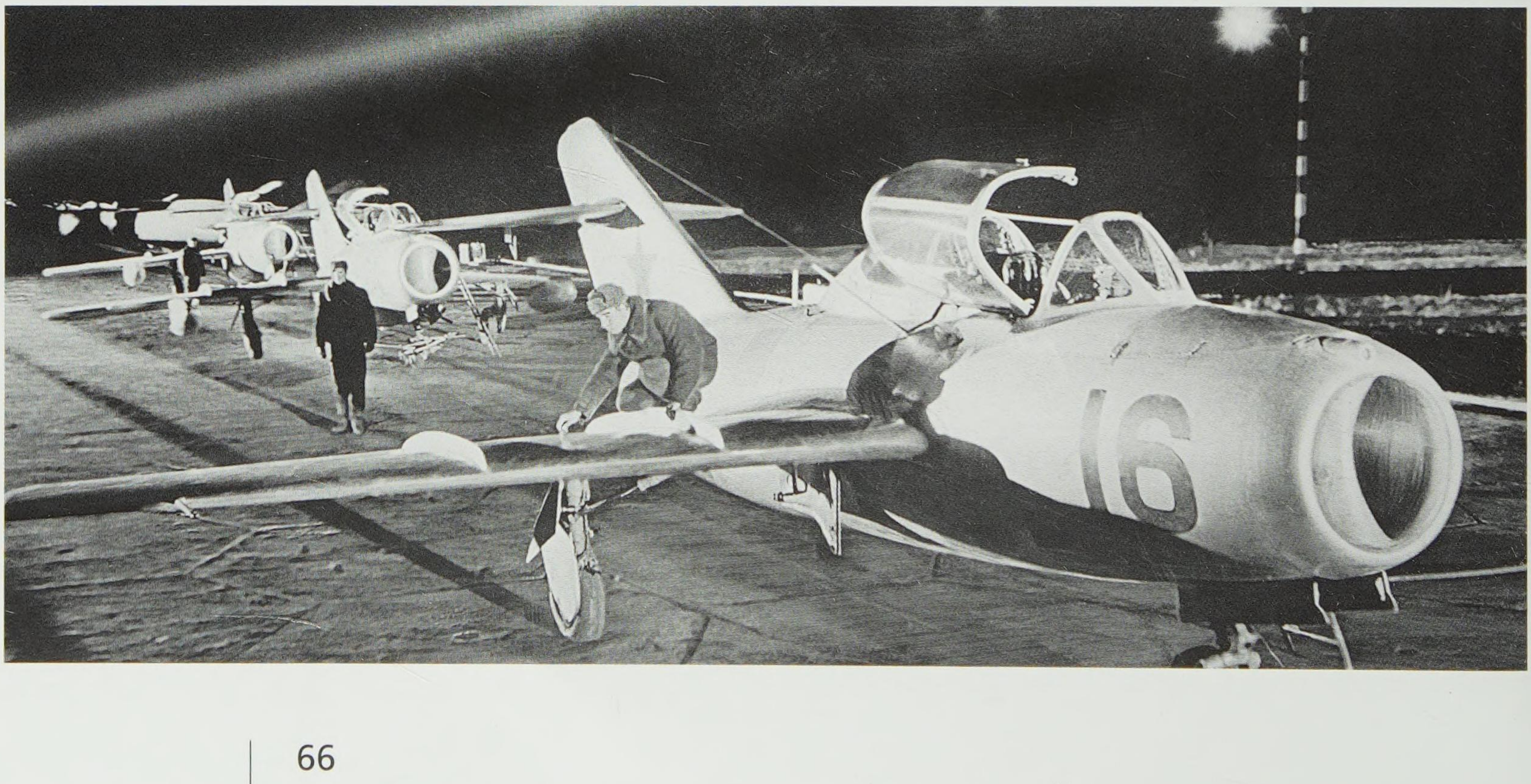


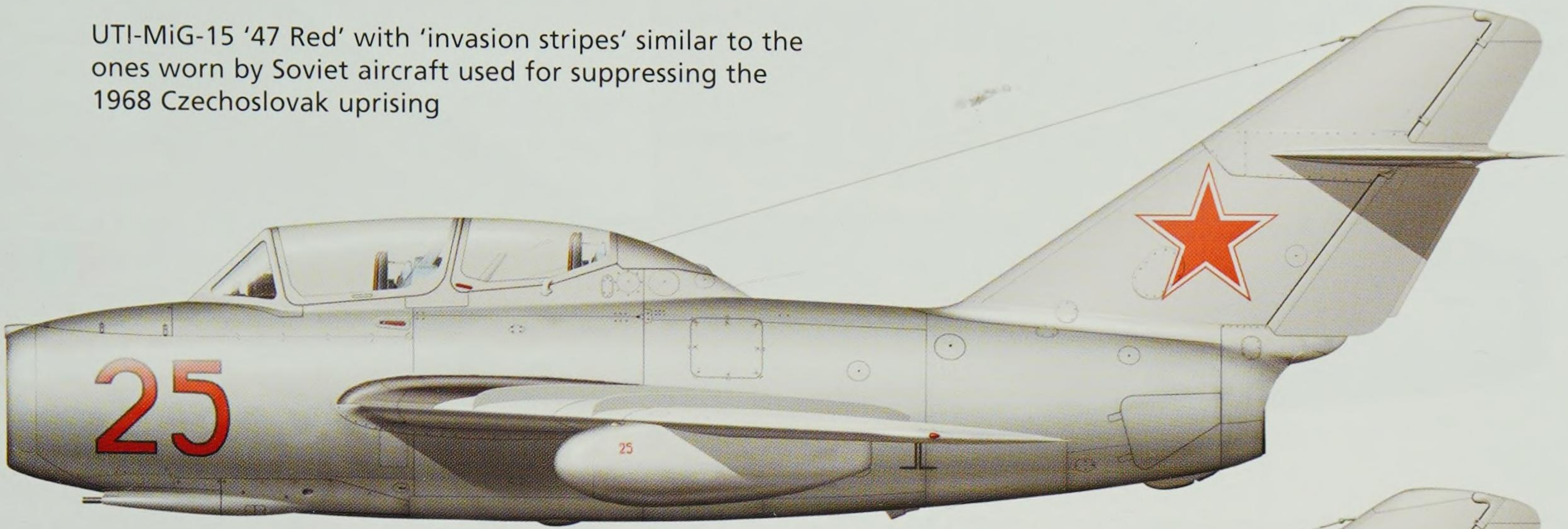
Ground crew in winter attire work on a UTI-MiG-15 coded '39 Red'.

An enamel badge issued to a military pilot college graduate (class of 1954).

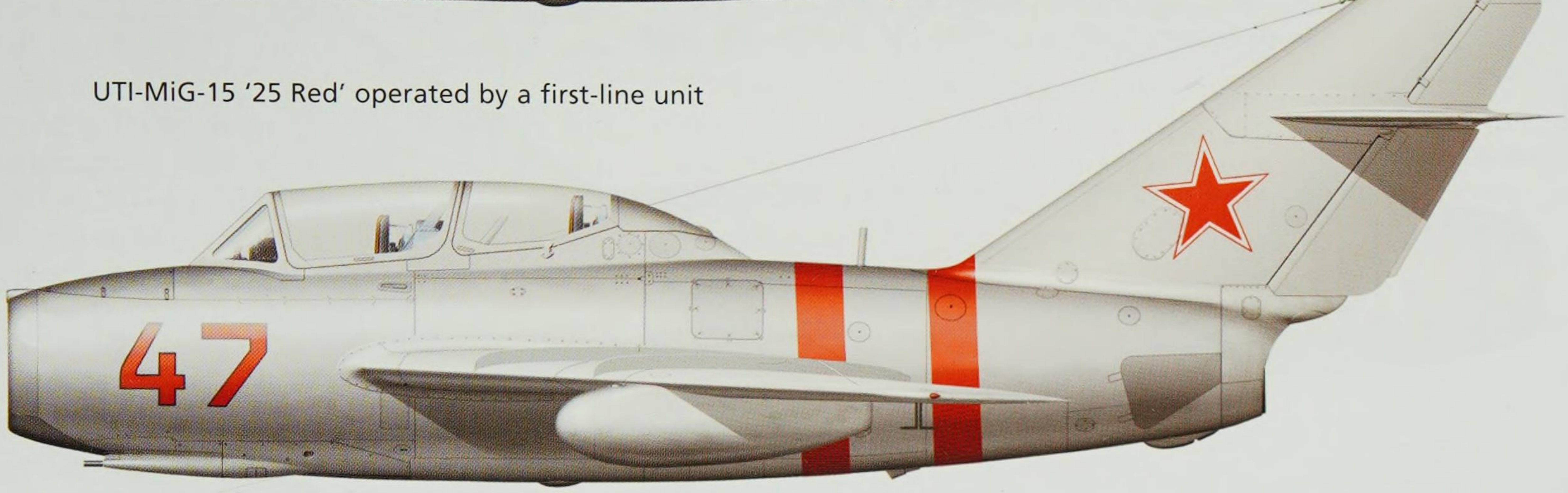
pleted its state acceptance trials successfully and entered production was the MiG-19, the Soviet counterpart of the North American F-100 Super Sabre. In the meantime, however, US aircraft manufacturers were launching production of new-generation fighters in the 'Century Series' with a top speed of some 2,000 km/h (1,240 mph). The MiG-19 was only marginally faster than the British and American jet bombers, which, given the lack of a nationwide automated ground controlled intercept (GCI) system, accounted for the Soviet military's lack of interest in the *Farmer*. In 1956 the Air Force's Main HQ placed an order for only 200 MiG-19P *Farmer-B* radar-equipped all-weather interceptors for the PVO and 400 MiG-19S *Farmer-C* day fighters. The latter were largely meant to give the Air Force's flying personnel a taste of high speeds, high altitudes and high rates of climb (as mentioned earlier, the MiG-19 was not hugely popular with the Soviet Air Force). The military pinned their main hopes on the new combat aircraft being developed by Pavel O. Sukhoi's OKB-51, Artyom I. Mikoyan's OKB-155 and Yakovlev's OKB-115 which were due to com-

Three UTI-MiG-15s trainers in post-1955 markings are prepared for a night sortie on a floodlit ramp.





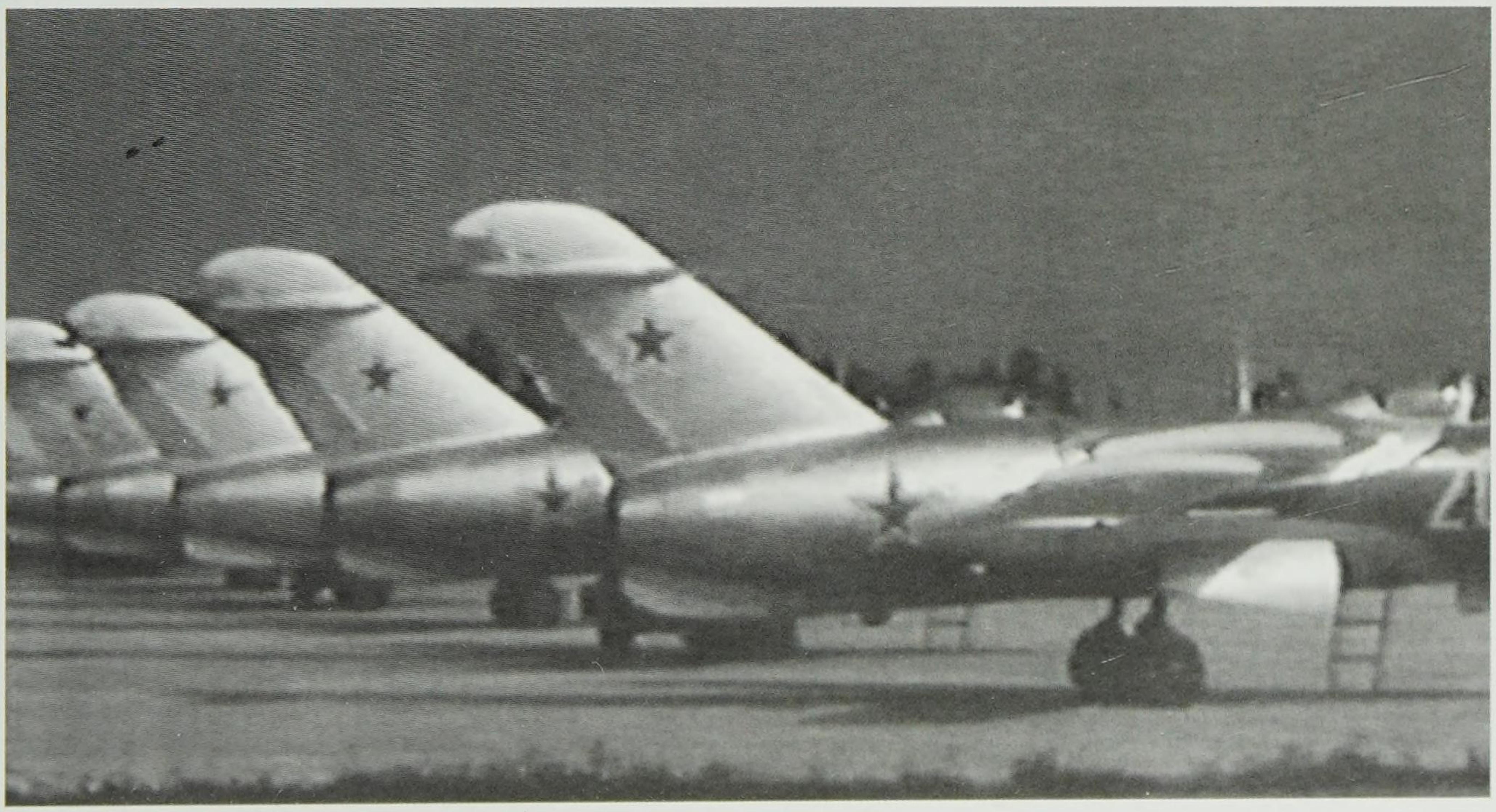
UTI-MiG-15 '47 Red' with 'invasion stripes' similar to the ones worn by Soviet aircraft used for suppressing the 1968 Czechoslovak uprising



UTI-MiG-15 '25 Red' operated by a first-line unit

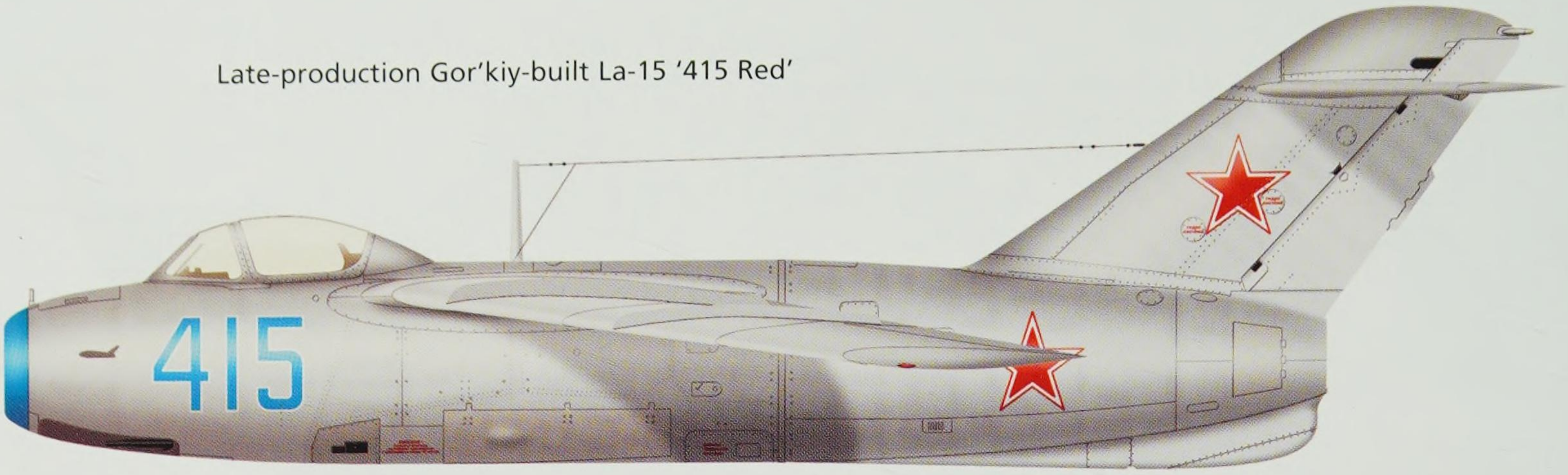
mence their state acceptance trials in the first quarter of 1956. These aircraft were to have a top speed of 1,700-1,900 km/h (1,056-1,180 mph) and a service ceiling up to 20,000 m (65,620 ft), and one of them was regarded as a potential successor to the MiG-19.

Not only the Air Force top brass but the nation's leaders as well were worried by the obsolescence of the Tactical Aviation's aircraft fleet. In April 1956 the new Minister of Defence Marshal Gheorgiy K. Zhookov delivered a report on the current condition and development prospects of the Attack Aviation to the Soviet government. The report, which had been approved by the General Staff of the Soviet Armed Forces and the Air Force's Main

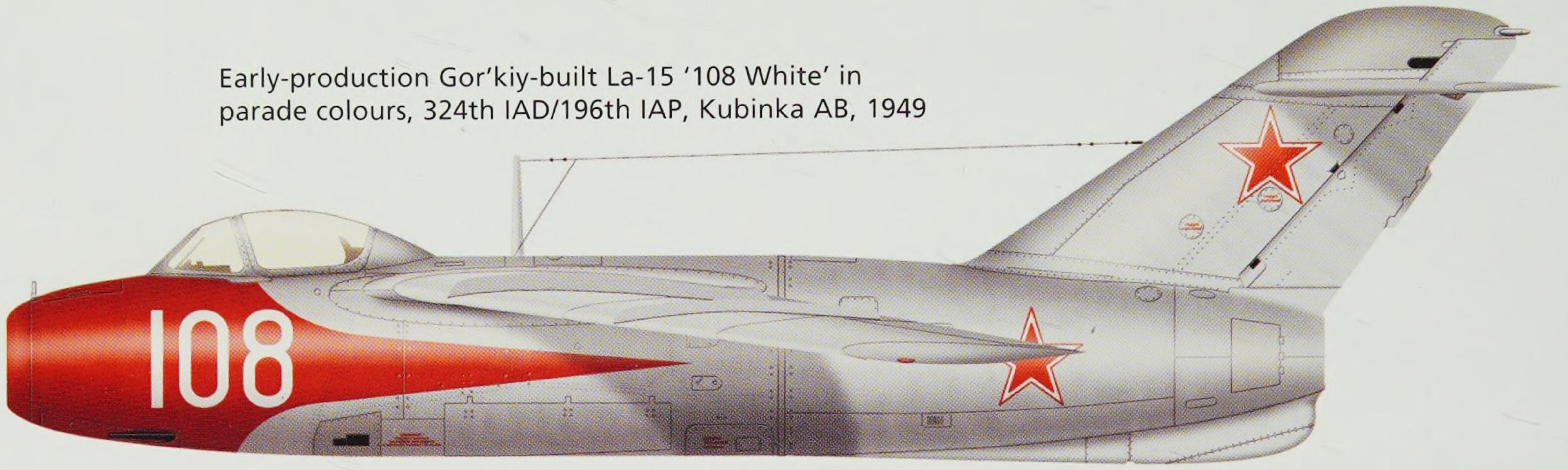


324th IAD/196th IAP La-15s on the flight line at Kubinka AB during service trials in 1949. The special colours were applied for an air parade.

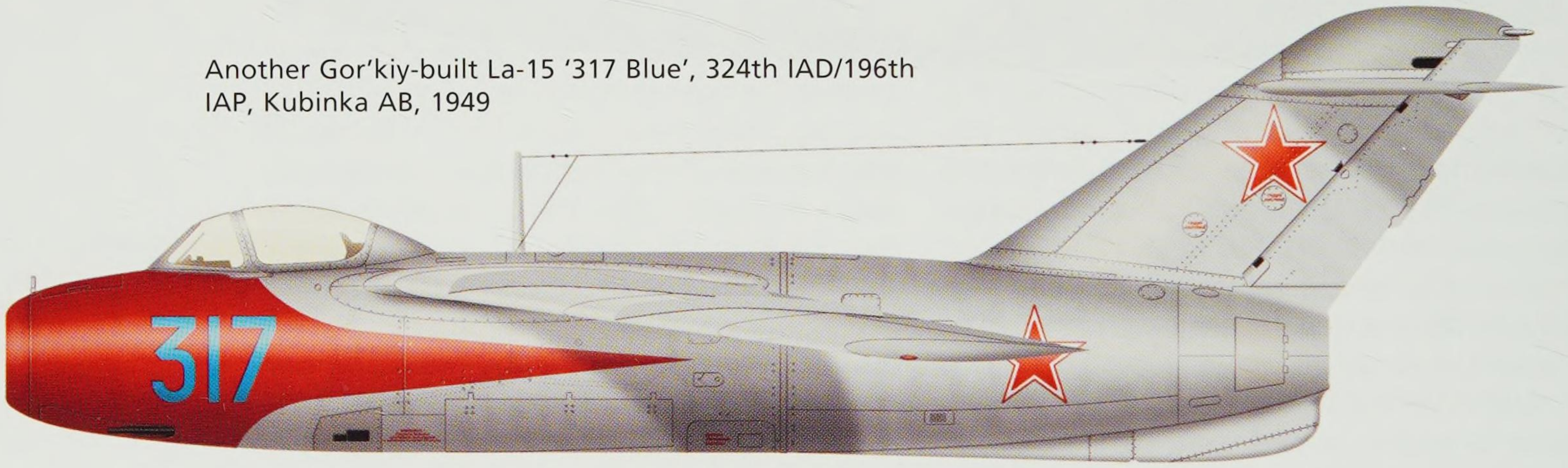
Late-production Gor'kiy-built La-15 '415 Red'



Early-production Gor'kiy-built La-15 '108 White' in parade colours, 324th IAD/196th IAP, Kubinka AB, 1949



Another Gor'kiy-built La-15 '317 Blue', 324th IAD/196th IAP, Kubinka AB, 1949



HQ, effectively slammed the Soviet attack air units' performance in the recent war:

'Great Patriotic War experience has shown that, despite the attack aircraft being armour-plated and despite the relatively weak enemy air defences, our attack aviation suffered heavy losses, the combat attrition figures being almost twice as high as those of the bombers. With their 400-kg [880-lb] bomb load, the IL-2 and IL-10 were much less effective over the battlefield as compared to the bombers.'

The report went on to denounce the plans to field the IL-40 jet attack aircraft:

'Neither will the IL-40 jet attack aircraft currently under construction be an effective solution of the close air support task, since it has the same insignificant bomb load of 400 kg and a short radius of action at low altitude. The stronger air defences on the battlefield will lead to even higher and unwarranted losses of attack aircraft while the effect of their operations will be inadequate.

In our opinion, attack aviation is ill suited to modern warfare. Its principal tasks of close air support and troop escort can well be performed by bomber aviation (of which we are short and which needs to be reinforced), while certain tasks can be readily transferred to fighters.'

Yet, it was not the defence minister's personal view that killed off the IL-40; far more damaging was the hostile attitude of the new Soviet leader Nikita S. Khrushchov towards

От Военного Совета Военно-Воздушных Сил

A pennant awarded to an Air Force unit by the Air Force's Military Council for excellent service.

attack aircraft in general – a grudge he had borne since the war. When Marshal Zhookov proposed eliminating the Attack Aviation in the mid-1950s, the idea found support in the government. The IL-10/IL-10M were phased out and part of the aircrews were given conversion training for the MiG-15*bis* (in so doing ten attack air divisions were reorganised as light bomber divisions), the rest of the crews joining the fighter components of the VVS and the PVO. The IL-40 programme was cancelled and all further work in the area of attack aircraft design was halted. Instead, from 1957 onwards the FA received fighter-bomber regiments, which were initially equipped with suitably modified MiG-15*bis* and MiG-17F fighters that had been withdrawn from first-line service as obsolete.

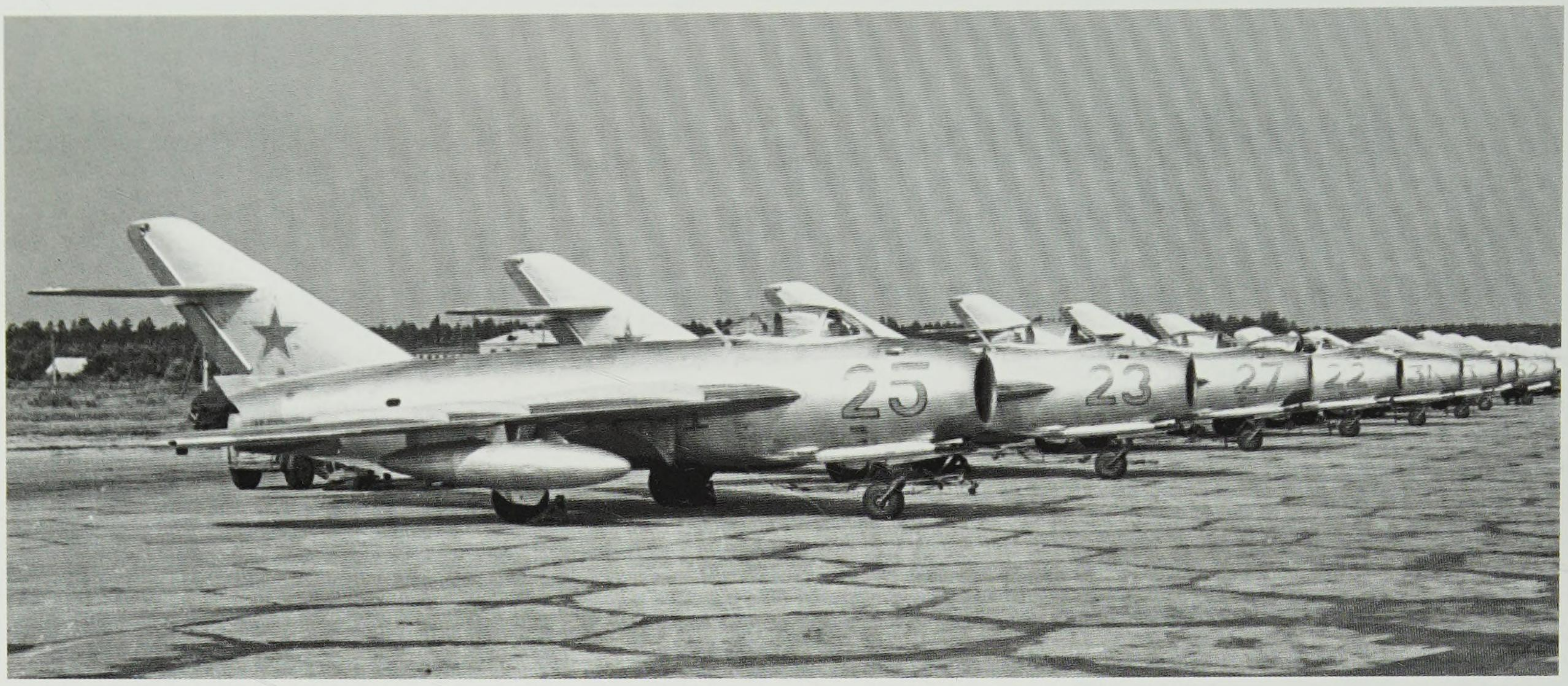
As a fighter-bomber, the MiG-15*bis* was handicapped by its small ordnance load – usually two 100-kg (220-lb) bombs – and the lack of proper sighting and navigation systems. Protection against anti-aircraft fire was also poor. Unlike the armoured IL-10, the MiG-15*bis* boasted only a bulletproof windscreen, a front armour plate for the pilot and an armoured headrest (plus an armoured seat back on late production batches); this was adequate for air-to-air combat but definitely not enough for a fighter-bomber. On the plus side, the MiG-15*bis* had very potent cannon armament (two 23-mm cannons and one 37-mm cannon), which at least partly justified its use as a close air support (CAS) aircraft. In addition to bombs, which it had been able to carry from the outset, in its new capacity the MiG-15*bis* was armed with 57-mm folding-fin aircraft rockets (FFARs) and 212-mm and 190-mm high-velocity aircraft rockets (HVARs), packing a much bigger punch.

As the fighter-bomber units equipped with the MiG-15*bis*, the Soviet Air Force developed and implemented new combat tactics tailored to the jet. As compared to the IL-10M the MiGs used a wider range of tactics. They could deliver their bombs in level flight at 300-500 m (980-1,640 ft) and in a 10-20° or 50-60° dive; gunnery and rocket launch was performed in a 5-15° or 20-30° dive and the attack could commence at any speed from 400 km/h (248 mph) to maximum speed. Bombing attacks with a dive angle up to 30° and gunnery/rocket attacks in a 15-30° dive were possible at night against illuminated ground targets.

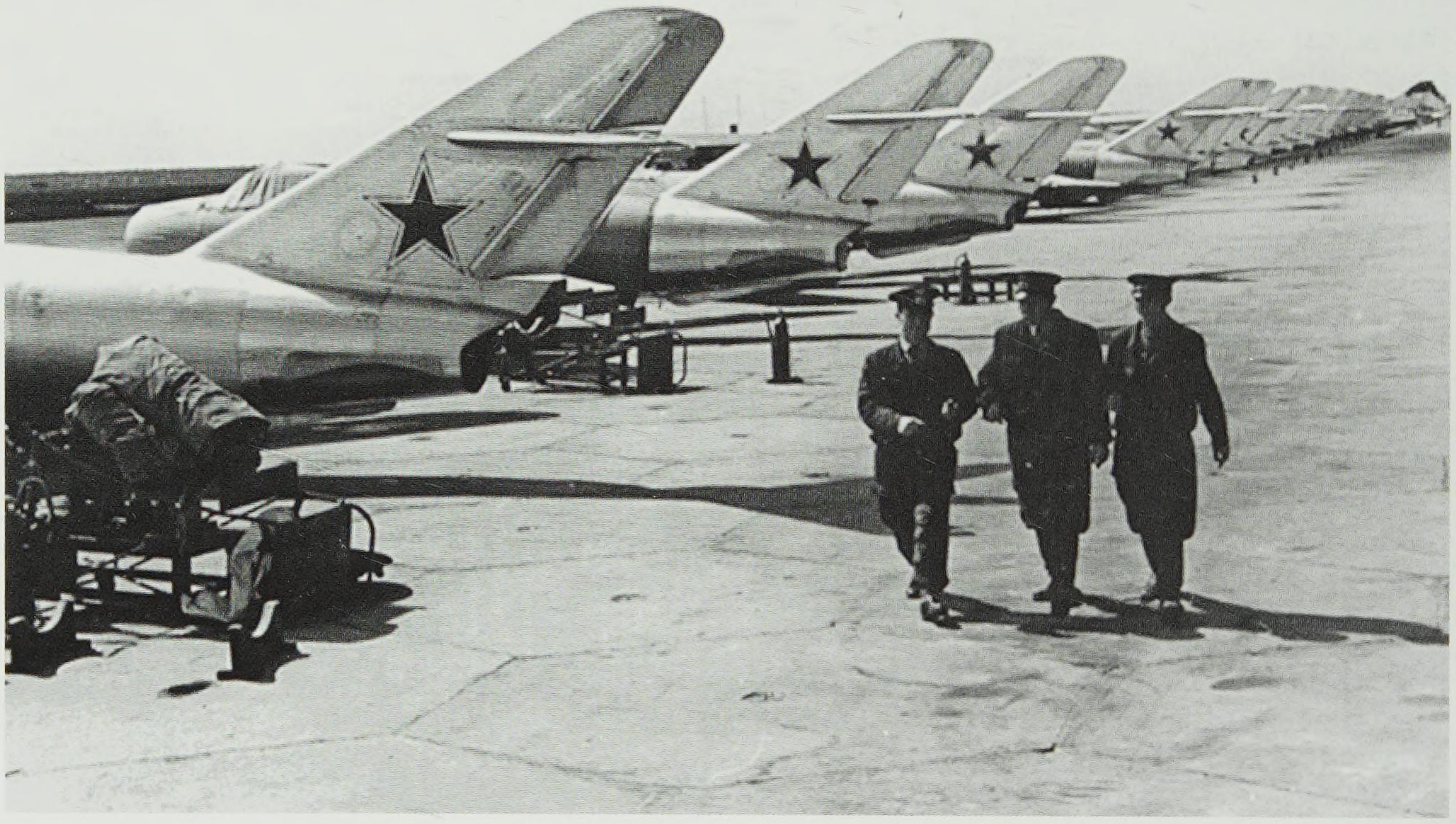
New and more complex attack techniques specially developed for the MiG-15*bis* were toss bombing in a 45° or 110° climb, bombing and gunnery attacks after a combat turn or a half-loop (Immelmann turn) in a 30-40° or 50-60° dive, ditto in the course of a loop (in a 50-60° dive), and combined bombing/gunnery/rocket attacks in a 10-40° dive. The toss bombing technique was introduced because the fighter-bomber aviation now had tactical nuclear bombs at its disposal.

Being aware of the MiG-15's vulnerability to ground fire, the pilots did their best to min-

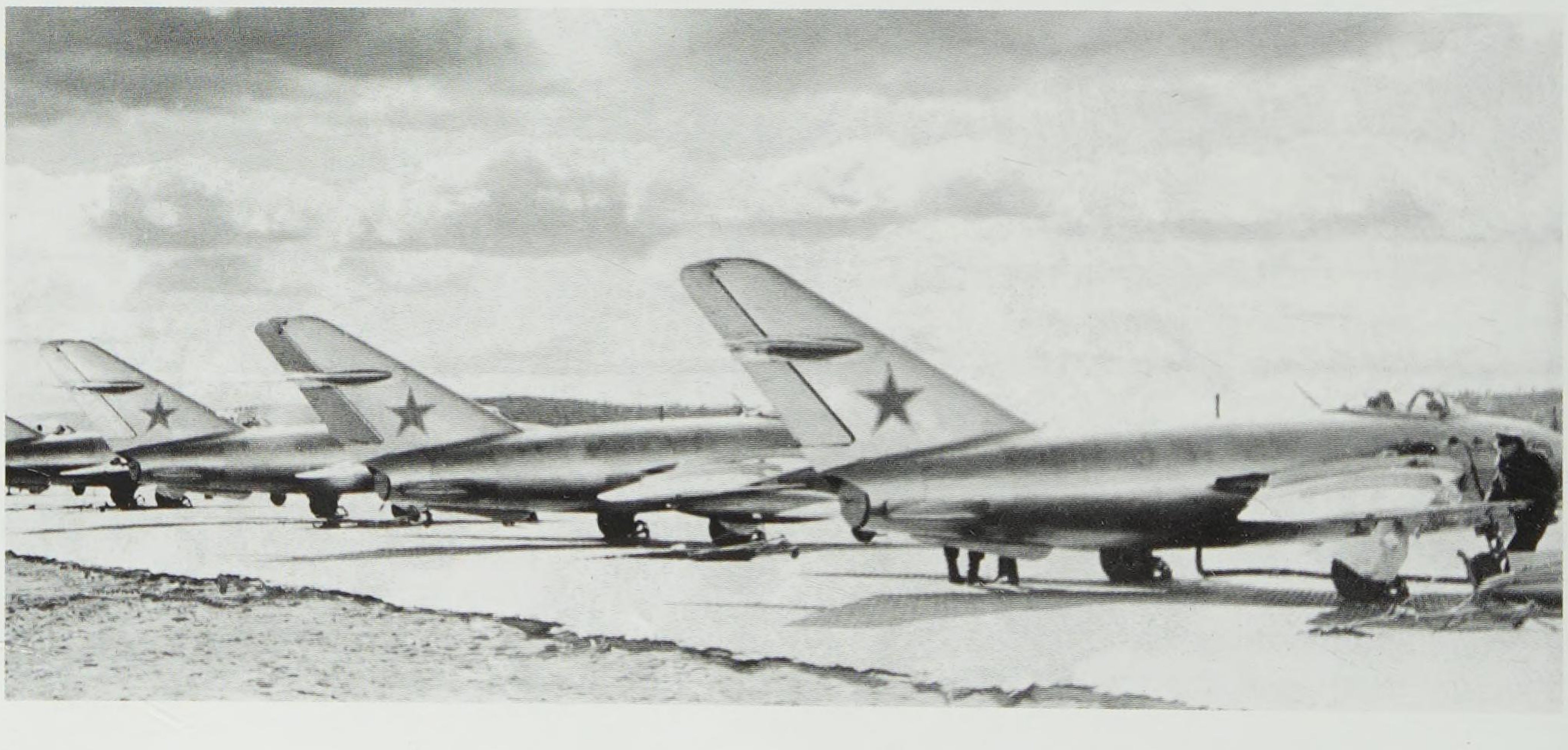
Stills from a documentary movie showing 196th IAP La-15s during practice sessions for the air parade.



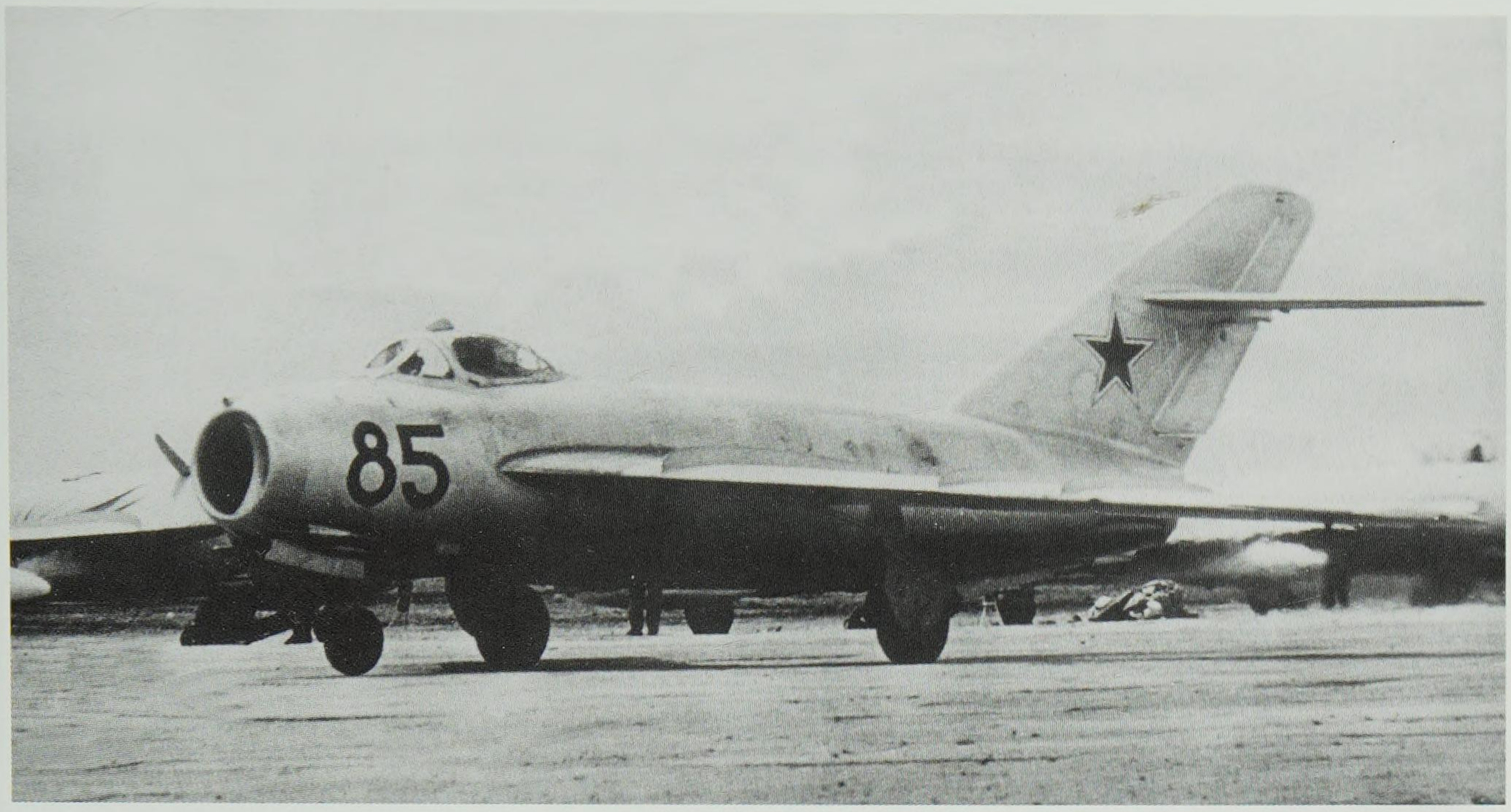
Operational MiG-17s *sans suffixe* at a Tactical Aviation base.



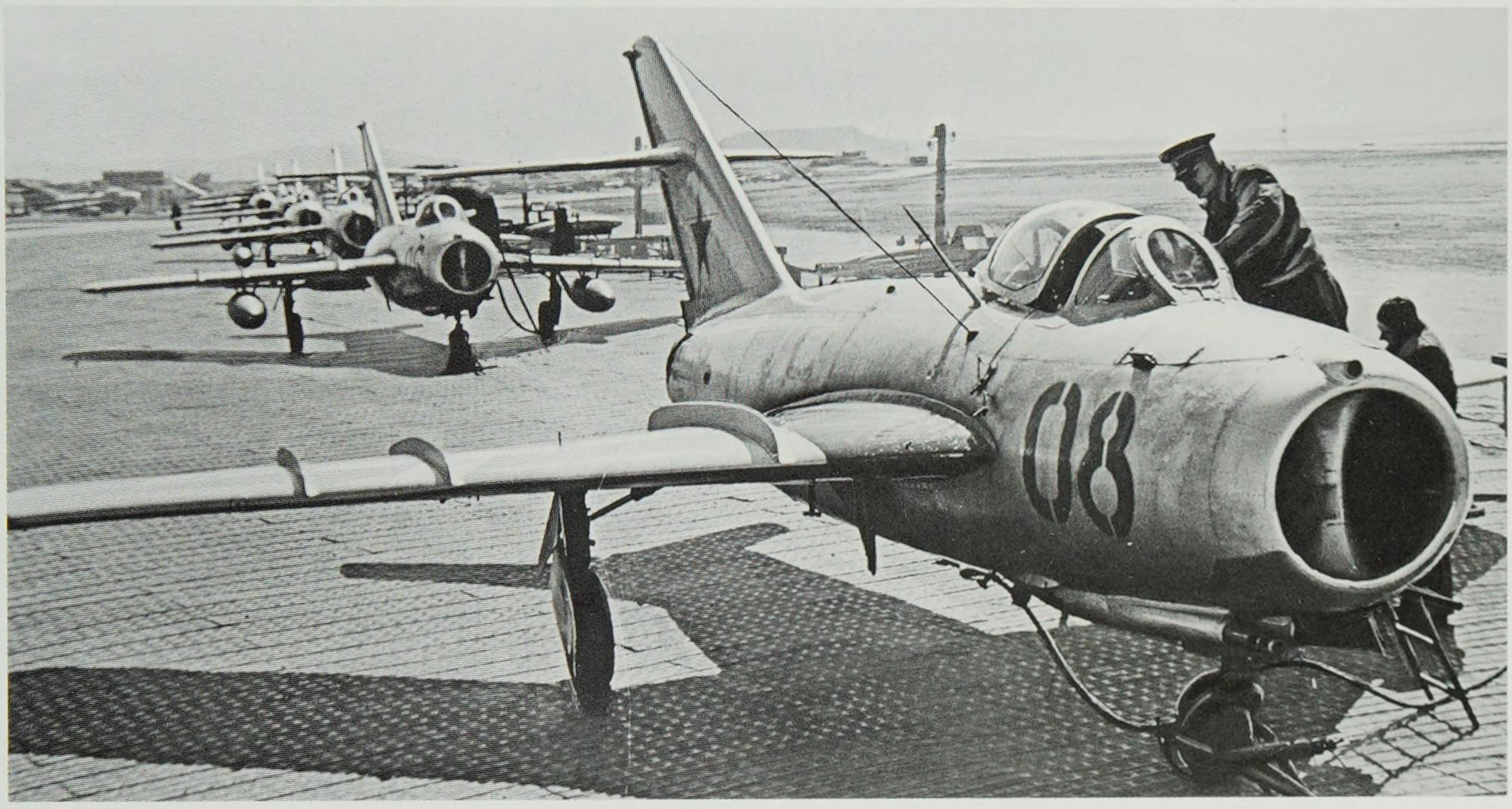
The *Fresco-As* pictured here are late-production aircraft with 0.88-m^2 airbrakes.



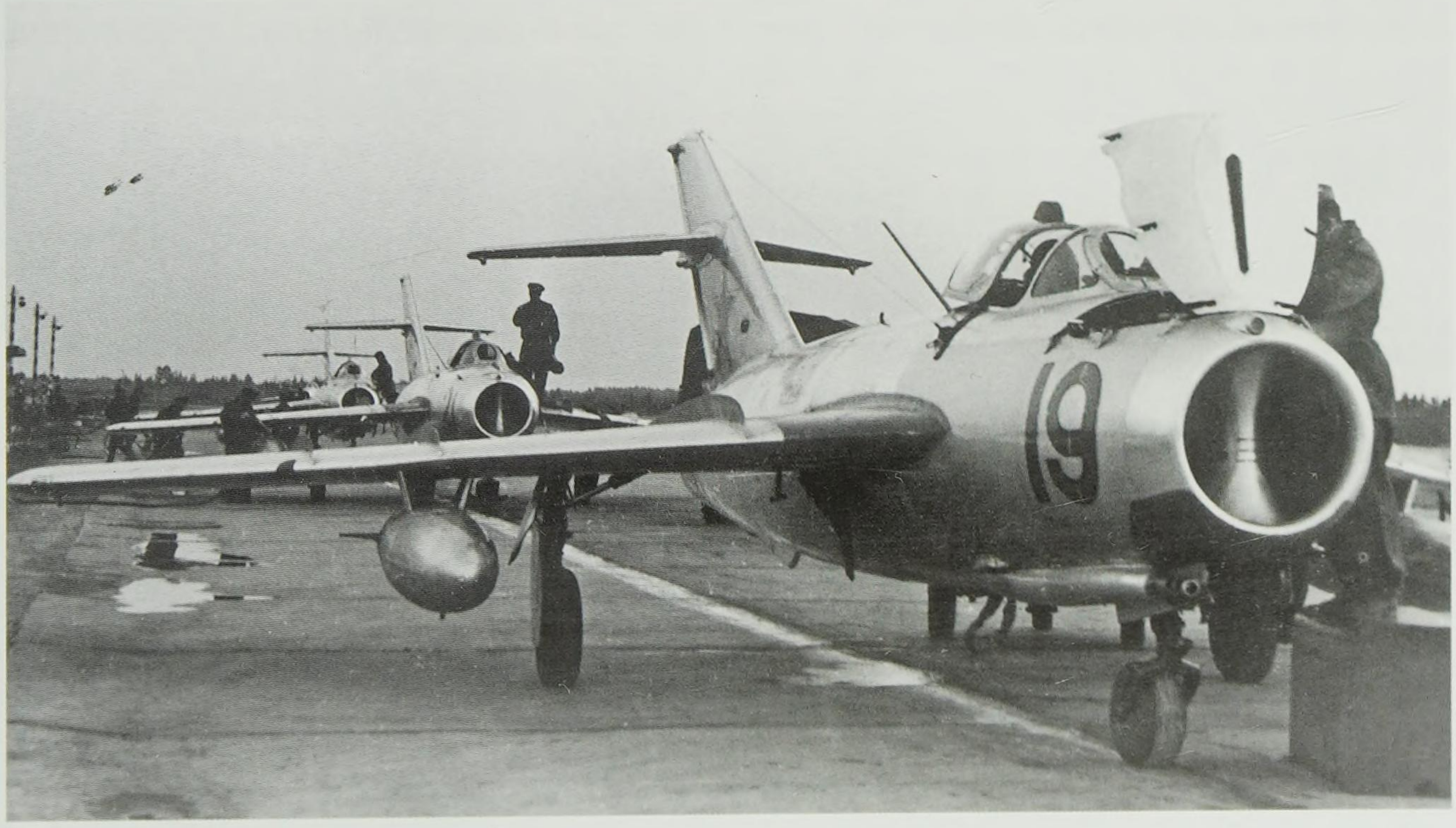
Late-production MiG-17s are pictured at an auxiliary airfield covered with perforated steel planking (PSP).



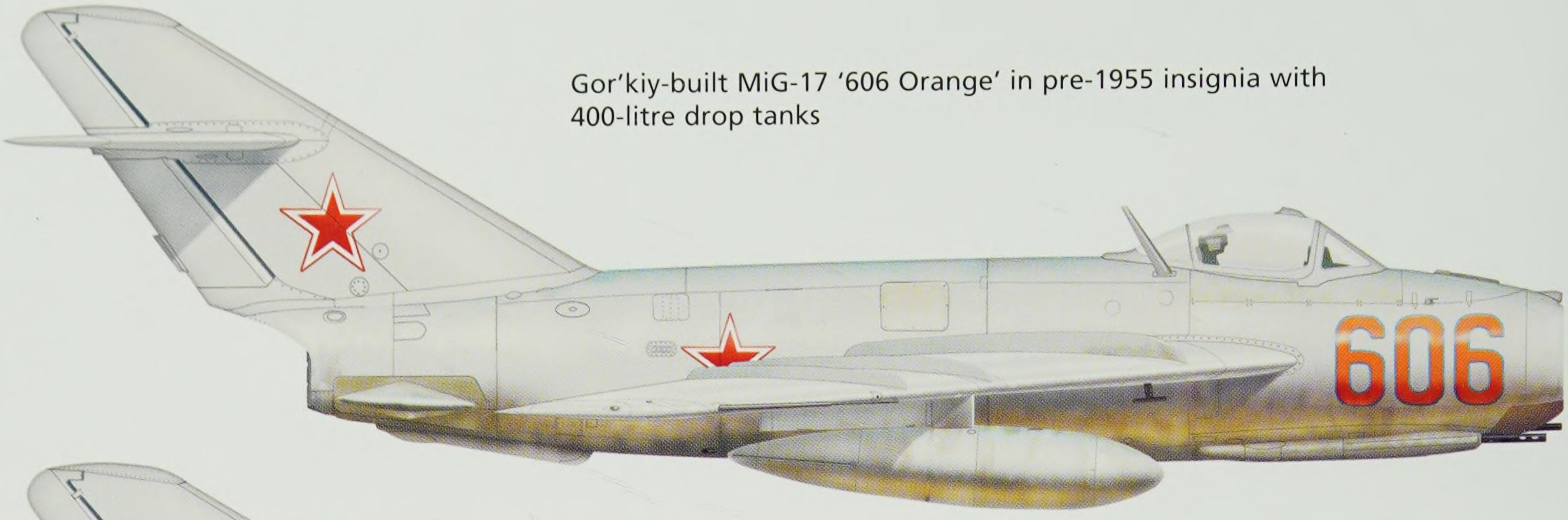
A late-production MiG-17 *sans suffixe* taxies out for a mission.



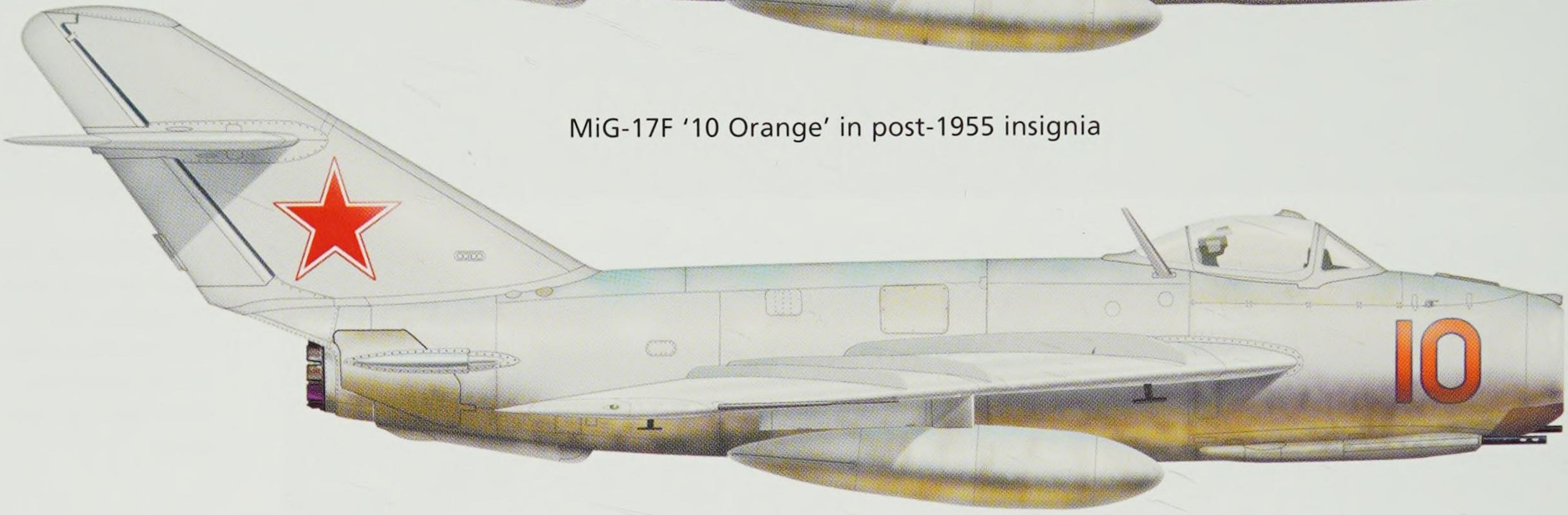
MiG-17s on a PSP hardstand at a tactical airfield. For some reason the nearest aircraft lacks drop tanks.



A technician uses a box to access the avionics bay of a MiG-17.



Gor'kiy-built MiG-17 '606 Orange' in pre-1955 insignia with 400-litre drop tanks



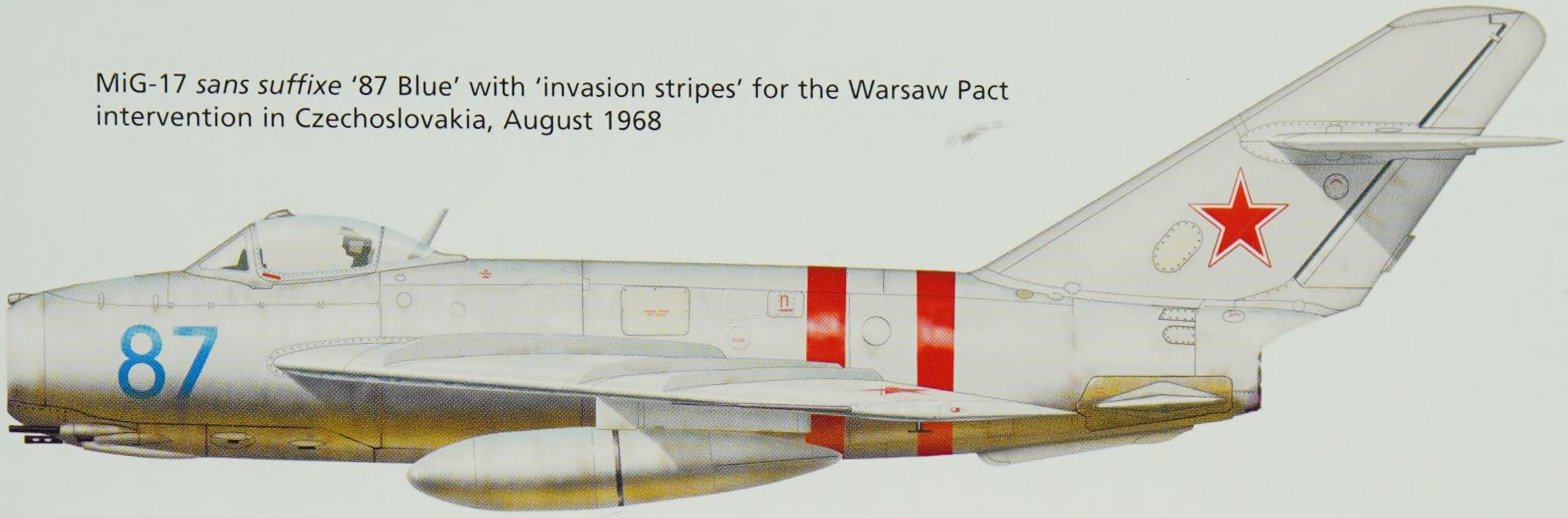
MiG-17F '10 Orange' in post-1955 insignia

imise the time spent over the target and hence exposure to the enemy's air defences. This meant using all available weapons in a single attack if possible. If the target survived the first firing pass, a repeat attack would be made after two U-turns, a standard 360° turn or a 270° turn.

Besides destroying predesignated targets, MiG-15*bis* fighter-bombers could operate as 'duty bombers' summoned as required, sitting or loitering on ready alert, and fly 'free chase' missions, attacking targets of opportunity. During strike missions, roles were distributed between aircraft; some aircraft did the actual 'mud-moving' while others reconnoitred and designated the targets, still others neutralised the air defences and a fourth group flew top cover in case enemy fighters showed up.

The MiG-15*bis* fighter-bombers were also to assist regular tactical fighter units in fending off massive enemy air raids. In this case the pilot training technique was no different from

This MiG-17 *sans suffixe* coded '41 Red' appears to be painted light grey.



MiG-17 *sans suffixe* '87 Blue' with 'invasion stripes' for the Warsaw Pact intervention in Czechoslovakia, August 1968

that used in regular fighter units; the cannons were the principal weapon in this case.

In early 1958 plant No.21 in Gor'kiy converted a Novosibirsk-built MiG-15*bis* coded '24 Blue' as the prototype of the fighter-bomber version, using documents supplied by the Mikoyan OKB. This was done in keeping with the research and development work plan endorsed by the Air Force C-in-C on 25th January that year. To this end the fighter was retrofitted with two BD3-56 pylons about halfway between the main gear units and the drop tank attachment points. The following weapons options were possible:

- two eight-tube ORO-57K rocket pods with ARS-57 (S-5M) or KARS-57 (S-5K) FFARs (the K stood for *kumulya**tiv**nyy* – shaped-charge armour-piercing [warhead]);
- two bombs of 50-250-kg (110-551-lb) calibre;
- two S-1-OF HVARs (OF = *os**kol**ochno-foo**gahs**nyy* – high-explosive/fragmentation [warhead]) on ORO-212K launchers.

As an option, two more bombs could be carried on the standard drop tank hardpoints, increasing the maximum bomb load to 1,000 kg (2,204 lb). The cannon armament remained unchanged. All weapons were aimed using the standard ASP-3N gunsight.

There were no manufacturer's flight tests. Together with a similarly converted MiG-17 *sans suffixe* coded '15 Blue' the aircraft went directly to GK NII VVS for trials which lasted from 4th March to 30th June 1959, involving a total of 114 flights in both aircraft. It was discovered that, while enhancing the aircraft's combat potential, the increased weapons load impaired the MiG-15's performance somewhat. With two 250-kg bombs and two 400-litre (88 Imp gal) drop tanks, take-off weight increased to 6,441 kg (14,200 lb), the take-off run increasing to 805 m (2,640 ft). The higher gross weight led OKB-155 to impose the following limits for the MiG-15*bis* fighter-bomber:

- true airspeed with external stores, 805 km/h (435 kts) for any external stores combination;
- operational G limit, 7Gs without drop tanks (regardless of other stores), 4.5Gs with full drop tanks and 6Gs with empty drop tanks (regardless of other stores);
- with four 250-kg bombs or two 250-kg bombs and two S-1 HVARs, landing was impossible and two of the stores had to be jettisoned before landing;
- maximum internal fuel in the event of a landing with external stores was limited to 500 litres (110 Imp gal).

The maximum speed and G limits without external stores were identical to those of the standard *Fagot-B*.

Starting in 1960, the MiG-15*bis* was progressively replaced in the IBA by MiG-17s – likewise transferred from fighter units – and specialised Su-7B *Fitter-A* fighter-bombers. In so doing the *Frescos* were modified to MiG-17AS standard, receiving the ability to carry 212-mm S-21 HVARs and pods of 57-mm ARS-57 (S-5) FFARs; 50-, 100- and 250-kg (110-, 220- and 551-lb) bombs were widely used. Tactics used by the MiG-17 fighter-bombers were much the same as those employed by MiG-15 fighter-bombers, except that the attack was initiated at 870 km/h (540 mph) rather than 800 km/h (497 mph).

A peculiarity of the Soviet Fighter-Bomber Aviation at the time (including MiG-17 units) was the belief that using large groups of aircraft for strike duties was impossible or at any rate inadvisable. The official explanation was that the higher speeds and the allegedly

ОТЛИЧНИК ВВС

The 'Excellent Air Force Serviceman' enamel badge.

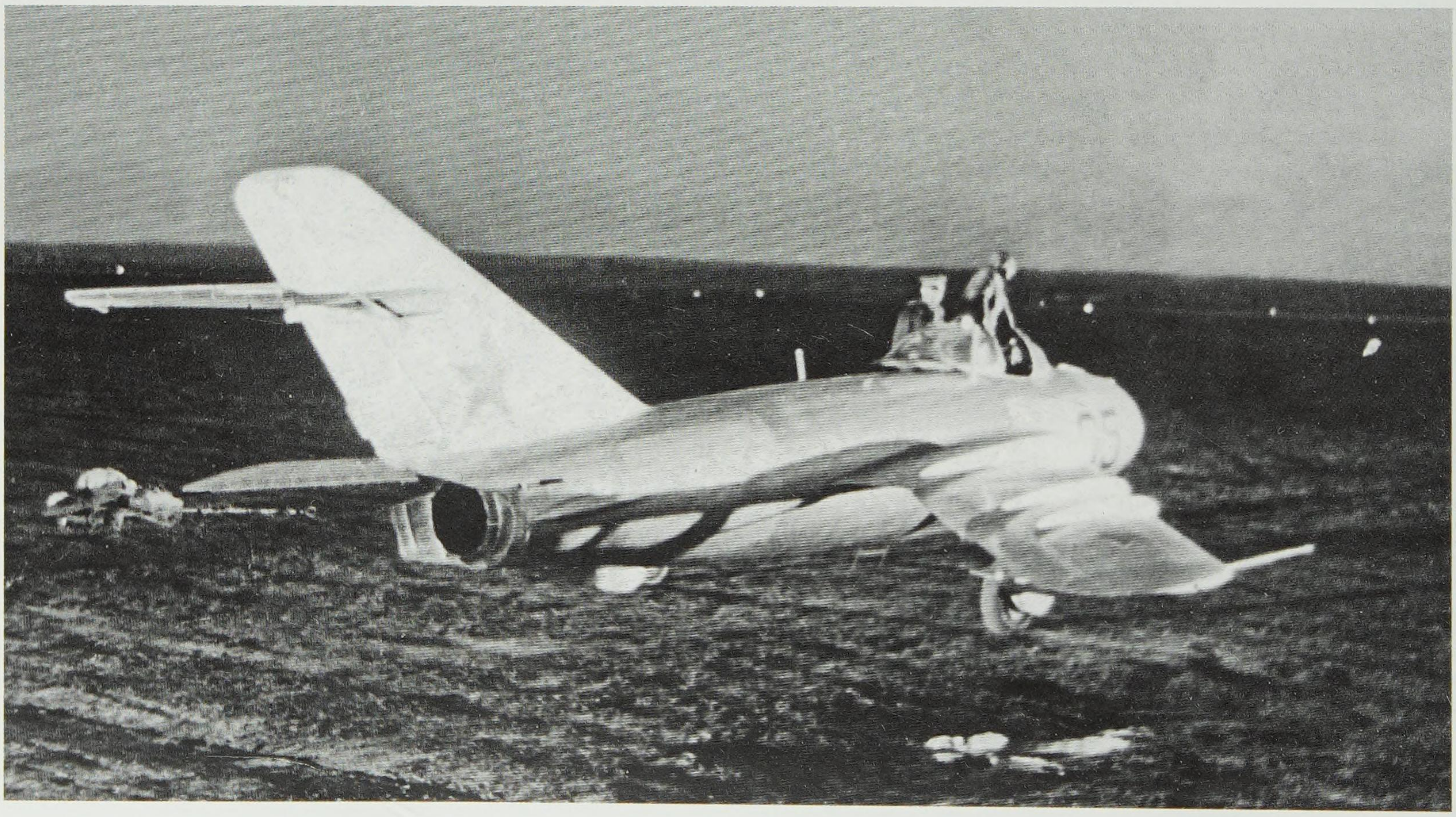
Three MiG-17s prepare for take-off, with APA-1 ground power units parked beside the jets.

A MiG-17F pilot climbs into his aircraft for a sortie at dusk.

much-reduced manoeuvrability as compared to old ground attack aircraft made flying in large formations too complicated and dangerous. Also, the military top brass were wont to exaggerate the MiG-17's potential as a fighter-bomber; in reality the *Fresco*, being designed as a pure fighter, could not meet the requirements applied to specialised strike aircraft.

The mastery of the MiG-15*bis* in the CAS role proved invaluable for training highly skilled pilot cadre for the Soviet Air Force; the techniques evolved with it were used and developed further by the IBA and, later, by the reborn Attack Aviation.

Now we have to go back a bit. In December 1956, following the Defence Minister's instructions, the General Staff drew up proposals for the development of the Soviet Armed Forces' principal types of weaponry and hardware in the next 10-15 years. In the introductory section of this document, Marshal Vasiliy D. Sokolovskiy expressed



his alarm about the numerous cases when the Soviet Union *'lags far behind the potential adversary's technical level in aviation research and development programmes'*. He emphasised that the Soviet Air Force had no fighter that could match the speed and service ceiling of the Lockheed F-104A Starfighter interceptor.

As regards Tactical Aviation, the General Staff proposal included the following types of advanced aircraft:

- a high-altitude tactical fighter with a maximum speed of 1,800-2,000 km/h (1,118-1,242 mph) and a service ceiling of 18,000-20,000 m (59,060-65,620 ft) armed with two or three 30-mm cannons and designed mainly as a day fighter operating in visual meteorological conditions (VMC), with only limited instrument meteorological conditions (IMC) capability;
- an interceptor with a maximum speed of 1,900-2,200 km/h (1,180-1,367 mph) and a service ceiling of 20,000-22,000 m (65,620-72,180 ft) armed with 30-mm cannons and AAMs and equipped with a radar enabling day/night operations in IMC, with semi-automatic GCI guidance towards the target;
- a high-altitude tactical bomber with a maximum speed of 2,500 km/h (1,552 mph), a service ceiling of 25,000-30,000 m (82,020-98,430 ft) and a range of at least 1,500 km (931 miles) in supersonic cruise and up to 3,000 km (1,863 miles) in subsonic cruise;
- a tactical bomber optimised for low and medium altitudes, with a cruising speed of 1,100-1,200 km/h (683-745 mph) and a range of 2,000 km (1,242 miles). This aircraft was to be capable of operating from dirt airstrips and carrying an air-to-surface missile with a range of 100-150 km (62-93 miles) and a maximum flight speed of 3,000 km/h (1,863 mph).

MiG-17 pilots receive a briefing prior to flights in full regimental strength.

A typical propaganda shot showing 'pilots discussing a mission'. Too bad that only one aircraft is in sight...

A pair of blue-coded MiG-17Fs in echelon starboard formation.

MiG-17F '18 Red' makes a high-speed dash in afterburner mode.

Another view of the same aircraft with the after-burner engaged.

Eventually, however, the high-altitude tactical bomber concept turned out to be fundamentally flawed and the aircraft was never built. The requirements for the low-/medium-altitude tactical bomber, on the other hand, were unreasonably understated, while the part of the requirement applying to the ASM was complete utopia. Thus, the military aircraft orderbook for 1957 included neither attack aircraft not the light bombers that were supposed to replace them.

In January 1957 Air Marshal Konstantin A. Vershinin was appointed the new Soviet Air Force C-in-C. On return to the Air Force from his post as PVO C-in-C, which he had held in June 1953/May 1954, he had a very clear view on fighter development trends and prospects. Hence the March 1957 directive of the USSR's Military Council (the draft orderbook for military aircraft production in 1958-59 was discussed at the March session) included five new tactical fighter and interceptor types that were to be developed and put into production.

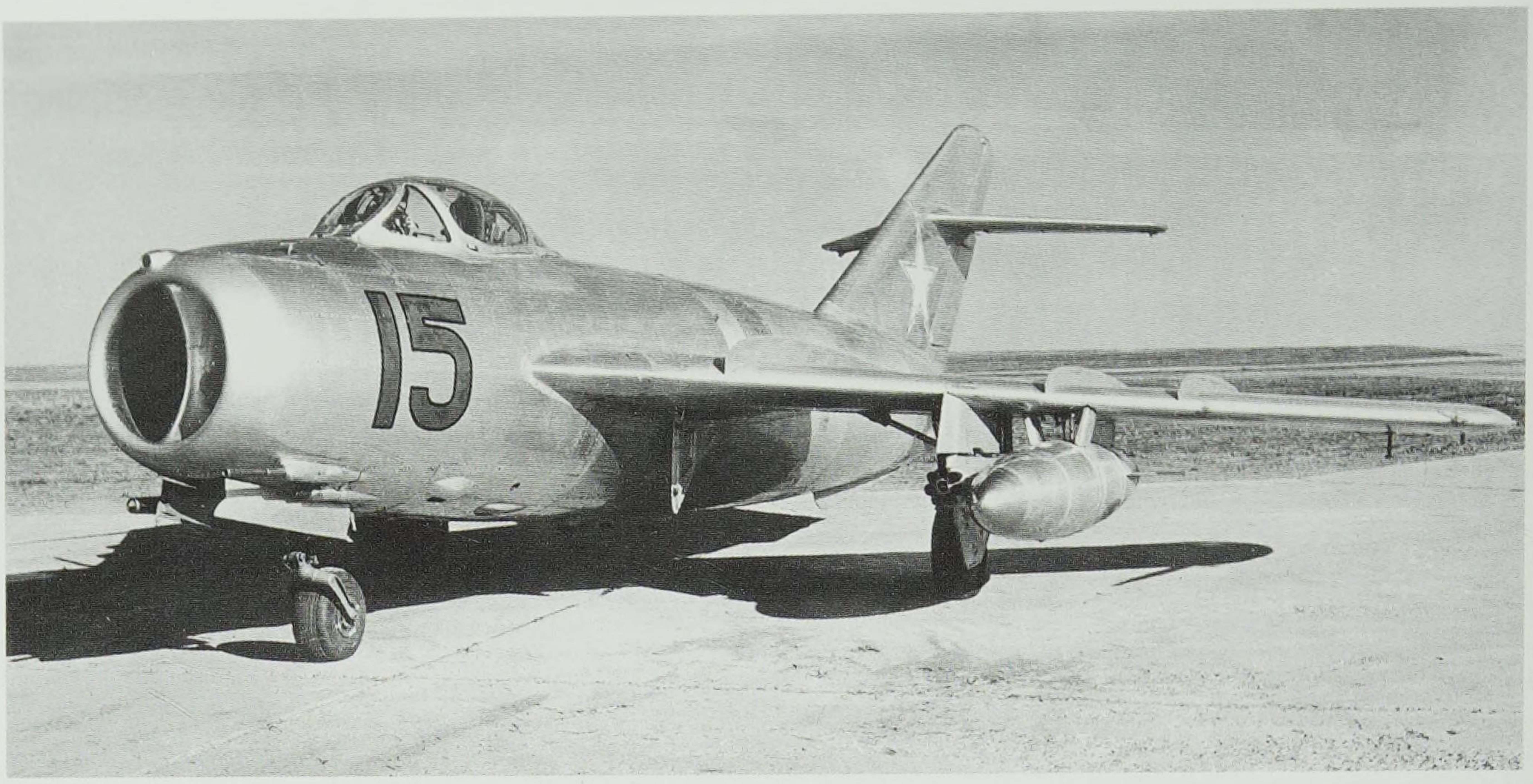
In May 1957 Marshal Sokolovskiy suggested to Vershinin that the latter should *'specifically mention the gap [with the western world] in tactical bomber development and the measures to be taken in order to close this gap'* in his planned report to the Communist Party Central Committee. In Sokolovskiy's opinion the Yak-26, IL-54 and Tu-98 prototypes did not meet the requirements of the day in full.

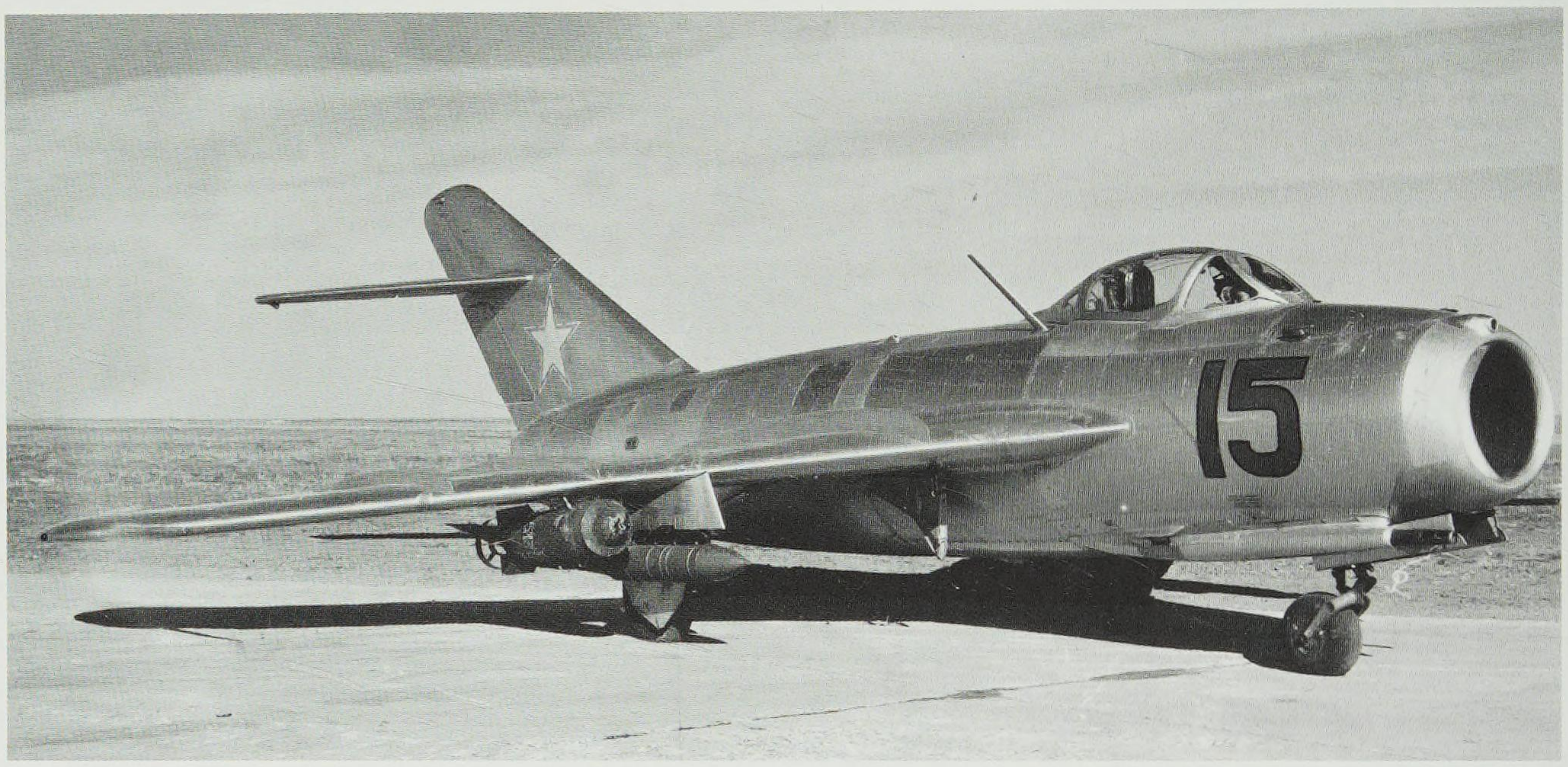
Given the rather disheartening situation in the tactical bomber component of the Air Force, the Su-7B (*bombardi**rov**shchik*) fighter-bomber derivative of the Su-7 *Fitter-A* tactical fighter looked rather promising; it was scheduled to commence state acceptance trials in the first quarter of 1958. In particular, the fighter-bomber was able to operate from dirt strips with a full ordnance load. Chief Designer Pavel O. Sukhoi, who was back in from the cold after Stalin's death, had managed to create two closely related tactical aircraft – the swept-wing Su-7 fighter for the Air Force and the delta-wing Su-9 *Fishpot-A* interceptor for the PVO – within a short time. In so doing he placed his bets on the latest Lyul'ka AL-7F afterburning turbojet, which offered high thrust but was beset by teething troubles. OKB-165 Chief Designer Arkhip M. Lyul'ka guaranteed that the AL-7F would be uprated to a maximum afterburner thrust of 10,000 kgp (22,045 lbst). Conversely, the Mikoyan/Gurevich Ye-5/Ye-6 light fighter series – the future MiG-21 *Fishbed*, which was to become the most popular Soviet tactical fighter – was designed around the smaller R11 afterburning turbojet developed by Sergey K. Tumanskiy's OKB-300.

The Su-7 attained production status ahead of the MiG-21. Incidentally, the initial-production MiG-21 *sans suffixe* (Ye-5) was considered an absolute flop because the low-powered R11-300 engine did not ensure sufficiently high performance. Fortunately OKB-300 quickly brought out the R11F-300 (*for**see**rovannyy* – uprated) which was fitted to the MiG-21F (Ye-6) and saved the day. As for the Su-7, poor engine reliability was the worst problem associated with the powerplant. Yet, the military quickly realised that the Su-7 made a much better fighter-bomber than a tactical fighter; it was simply too heavy for the latter role but had a large ordnance load, whereas the lighter MiG-21 could only take 500 kg (1,102 lb) of bombs.

The decisions taken in the late 1950s to reorganise a number of Soviet Air Force units into missile units armed with ballistic missiles bit a good-sized chunk off the Soviet manned combat aircraft fleet. As of July 1959 the Tactical Aviation had only 25 bomber divisions left, comprising 85 bomber regiments with an aggregate strength of some 2,600 outdated IL-28 bombers and MiG-15*bis*/MiG-17F fighter-bombers. The high-flying plans to re-equip the tactical bomber units with qualitatively new aircraft had to be shelved for the time being.

Only one available tactical bomber met the Air Force's requirements and was submitted fore state acceptance trials. It was the Yak-28 *Brewer*, which was a direct descendant of the Yak-25 *Flashlight-A* subsonic interceptor, the Yak-26 *Flashlight-B* supersonic bomber prototype and the Yak-27R *Mangrove* tactical reconnaissance aircraft derived from the Yak-26. Unlike the Yak-25/-26/-27 family, the Yak-28 was powered by Tumanskiy R11AF-300 afterburning turbojets which were almost identical to the MiG-21F's powerplant. Yet, the Soviet Air Force top brass had no illusions about the new bomber. In February 1959, speaking at a session of the USSR's Military Council, Marshal Rodion Ya. Malinovskiy (who had superseded the deposed Marshal Gheorgiy K. Zhookov as Defence Minister) said: *'...The situation with bombers is really dire. This is especially true for tactical bombers. We are currently operating the IL-28, which has outlived its useful life. Yet there is no replacement available. We aim to take delivery of a new tactical bomber, the so-*





'15 Blue', the MiG-17 fighter-bomber with extra pylons. Note the FFAR pod just inboard of the drop tank in the upper view; the tanks had to be jettisoned before the rockets could be fired.

called Yak-28 (*sic – Auth.*), *in the next few years, but this is not what we want...'*

Still, beggars can't be choosers, and the Yak-28 was cleared for production. After all, the other available tactical bomber types either showed even worse flight performance or were compromised by unreliable engines.

The advent of tactical nuclear bombs led to far-reaching changes in the Air Force's combat tactics and boosted its importance considerably. Meanwhile, in the late 1950s the PVO started re-equipping with MiG-19PM *Farmer-D* all-weather interceptors armed with four AAMs, while the Tactical Aviation started taking delivery of Su-7B fighter-bombers which had nuclear capability.

Bolstering the capabilities of the FA was not all about hardware; personnel training was also given due attention. New military colleges were established, training skilled pilots and navigators with engineering qualifications (the first graduation was in 1959).

On the whole the 1950s can be regarded as the golden age of Soviet jet aviation. The aircrews saw a lot of flying and participated in numerous exercises and other important events. One of these 'important events' was the annual air parades in Moscow which were staged up to three times a year – on May Day in Moscow's Red Square, on Air Fleet Day (18th August) at Moscow-Tushino and, weather permitting, on 7th November (the October Revolution anniversary), again in Red Square. These were grand flypasts involving hundreds of aircraft which sped in close formation above Gor'kiy Street (now Tverskaya Street) and Red Square, or Tushino airfield. The message was clear ('Behold the might of the Soviet war machine! Hear ye! Fear ye!'), and western observers were invariably awed by the well-organised flypasts and the pilots' flying skills, especially as regards formation keeping.

From the late 1940s to the early 1960s Soviet fighter aviation was represented at such air parades by the 9th IAD. This division comprised three fighter regiments stationed mainly at Kubinka AB west of Moscow – the 234th GvIAP (the 'showcase regiment' renowned for its aerobatic team), the 274th IAP and the 32nd GvIAP. (The second unit later became a fighter-bomber regiment and was accordingly redesignated 274th IBAP (*istre**bit**el'no-bombardi**rov**ochnyy **a**via**polk***).)

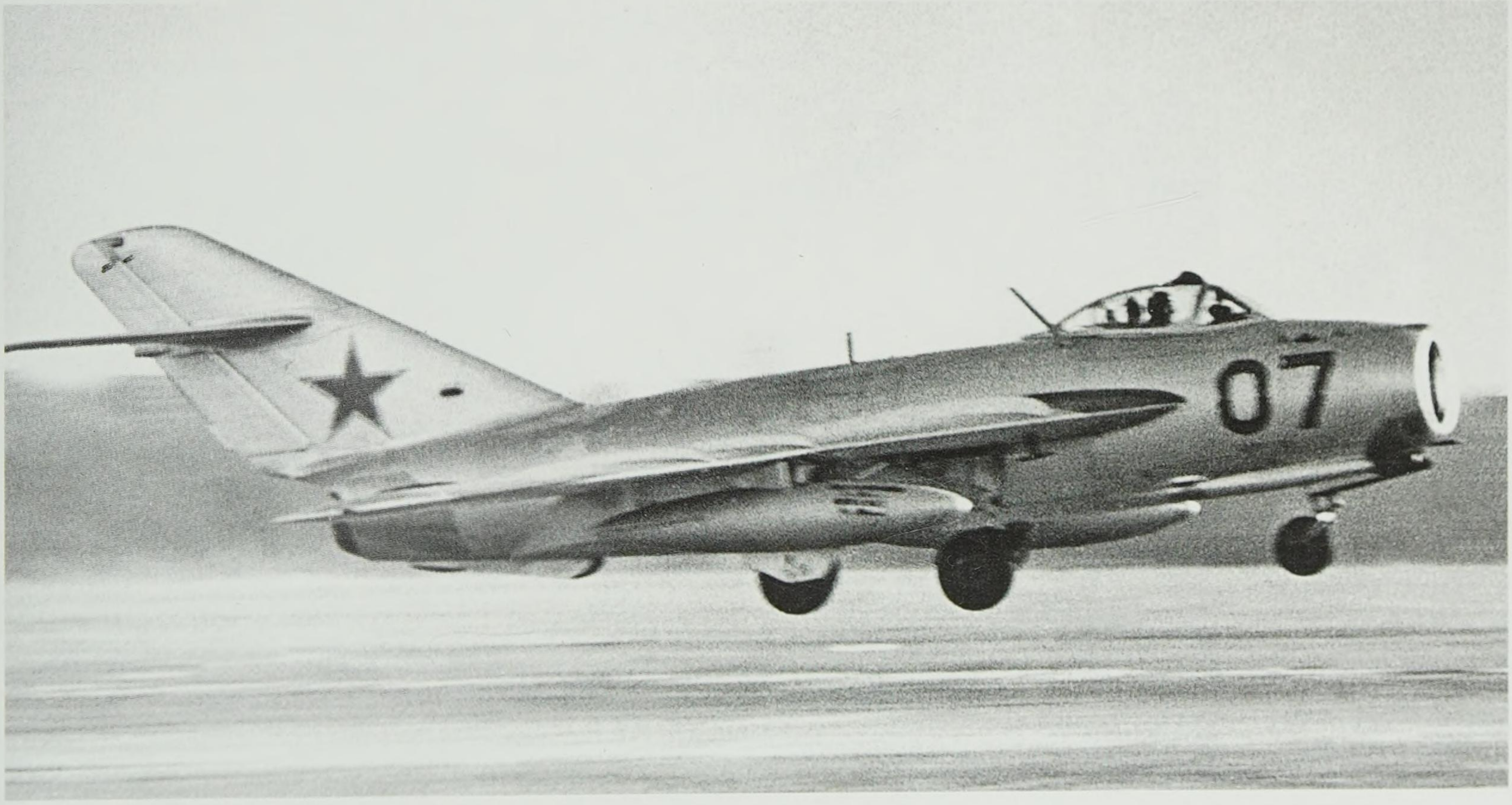
On 20th February 1950 the 32nd GvIAP, which was then based near Bryansk in Central Russia and flew MiG-9 fighters, was placed on maximum alert. The aircrews and the officers of the tech staff were told to board an aircraft, which took them to Kubinka; the rest of the personnel followed a short while later by rail, leaving the MiG-9s in Bryansk. The reason for this exodus was that Kubinka's resident 29th GvIAP (specifically, the aircrews and the officers of the tech staff) had redeployed at short notice to China in keeping with a Sino-Soviet agreement signed in Moscow by Chairman Mao Zedong, similarly abandoning their original MiG-15s at Kubinka. In China, the 29th GvIAP would receive other MiG-15s and operate from Shanghai, defending mainland China against air raids from Taiwan (see Chapter 6 for more details).

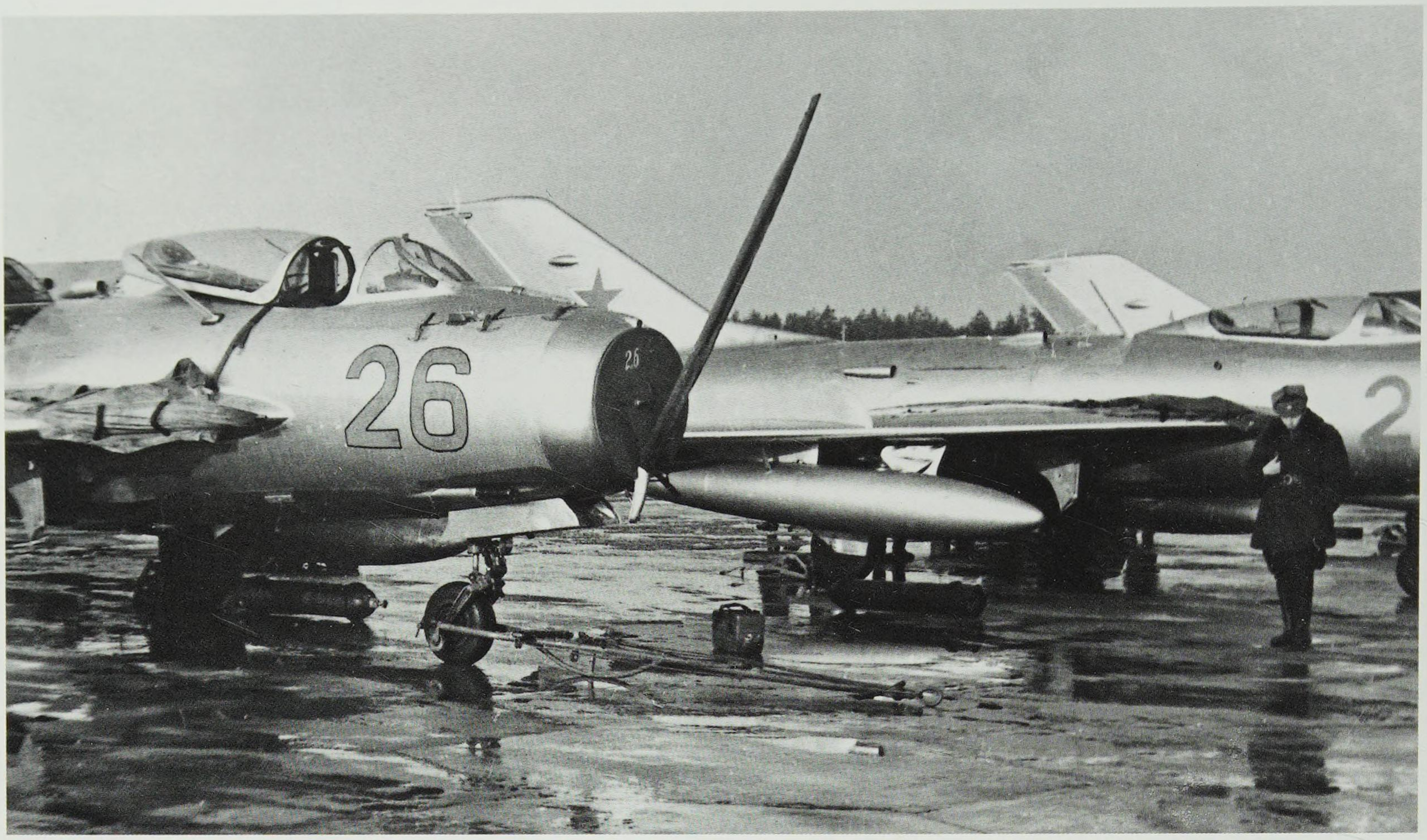
At Kubinka the newly arrived personnel of the 32nd GvIAP, teamed up with the remaining technical staff of the 29th GvIAP, took over operation of the resident MiGs, operating as part of the 9th IAD; the process was monitored personally by Lt.-Gen. Vasiliy I. Stalin, the then Commander of the Moscow MD's Air Force. The regiment was commanded by Lt.-Col. Sergey Dolgooshin (HSU). For starters, the unit was tasked with training the flight and ground crews to operate the MiG-15 and preparing to take part in the not-too-distant May Day parade. The 36-ship formation was to pass over Moscow in flights of three with a separation of 200-300 m (660-990 ft).

It did not take long to master the new hardware; in mid-March the 32nd IAP pilots started flying solo in the Yak-17UTI trainers which were a stepping stone towards the *Fagot*. The problem was that the trainers were few and the pilots – some 60 men in all – had to wait their turn. Besides, the Yak-17UTI, dubbed *samovar* by the airmen, was handicapped by its notoriously unreliable RD-10 engine having a time between overhauls of a mere 30-50 hours. The engine was prone to fuel leaks and to surging when the throttle was advanced. The MiG-15s required attention, too, and there was an unwritten rule that flights over Moscow were permitted only if the aircraft and the engine had at least 20 and 25 hours respectively remaining until the next heavy maintenance. Small wonder that the tech staff was working like scalded cats in the run-up to the parade – time was running short, and the technicians had to work in two shifts.

Nevertheless, all the MiGs were checked and test-flown, each pilot received his type rating and flew the *Fagot* solo. This called for superhuman efforts – the workday lasted

A MiG-17F with drop tanks is about to touch down (note fully deployed flaps).

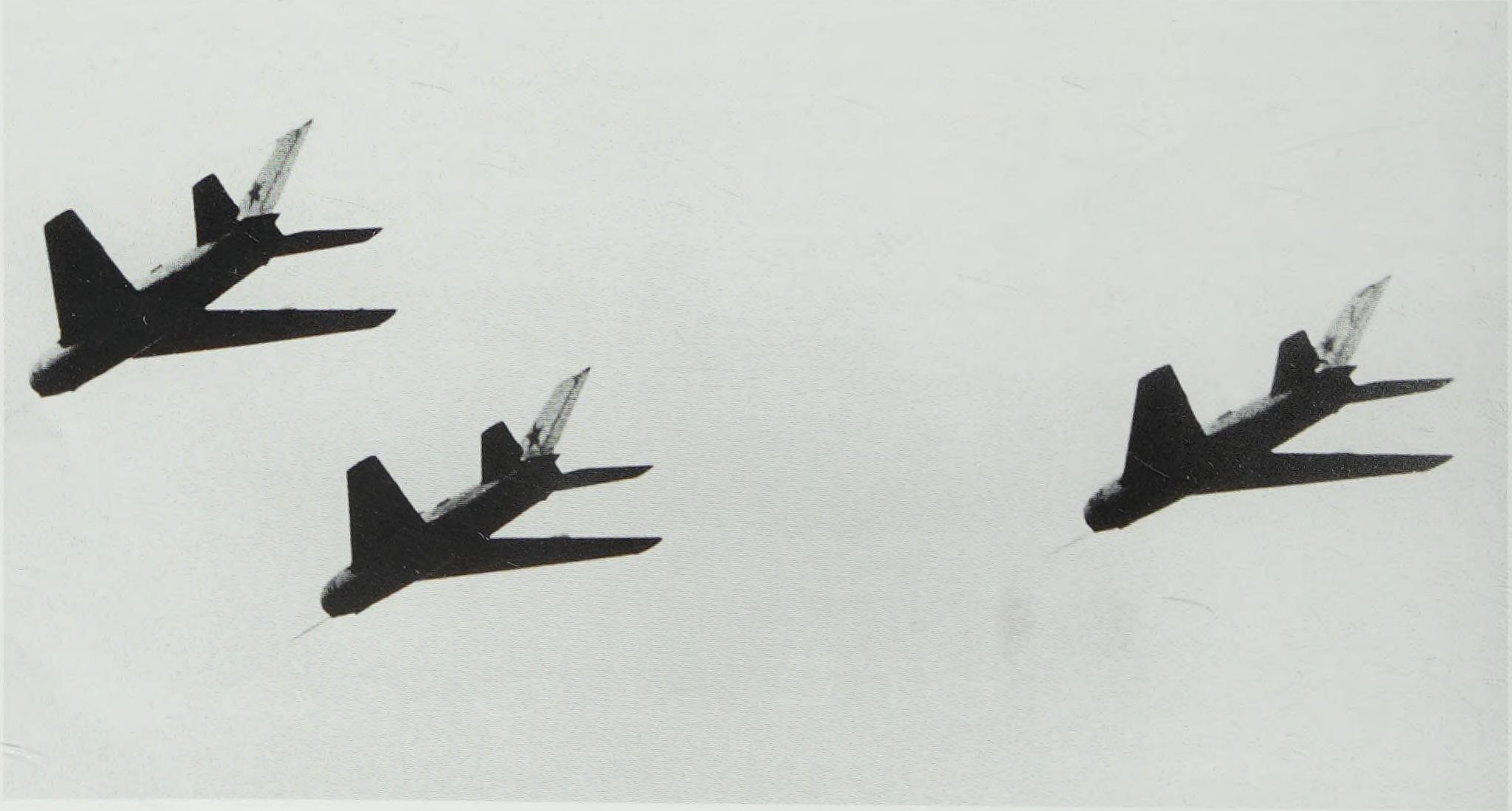




MiG-19 *Farmer-As* parked at a Soviet air base sometime after 1955, their pitot booms folded upwards to prevent damage. The aircraft in the foreground has a tactical code outlined in black.

12-14 hours, and the number of flights was not limited by any regulatory documents. As malfunctions cropped up, the ensuing repairs and adjustment work proceeded literally round the clock. The unit had to be 100% combat ready by all means; the popular slogan of the era 'Onward, to the complete victory of communism!' hung over the personnel's heads like a Damocles' sword. Onward, or else...! The omnipresent Or Else was represented by the squadrons' political officers responsible for indoctrination (a post introduced in 1950), the Communist Party and Komsomol (*Kommunis**tich**eskiy so**yooz** molo**dyo**zhi* – Young Communist League) organisations at the regimental, divisional and MD level and, of course, the infamous Special Department (*O**sob**yy ot**del***) – the Armed Forces' counter-intelligence service.

The pilots of the 9th IAD flew a lot when practicing for the air parades. When the formation of MiG-15s or MiG-17s swept over the venue, the lead aircraft's speed was 800-850 km/h (496-528 mph) while the subsequent flights (of which there were ten to twelve) could do 900 km/h (559 mph) and the 'tail-



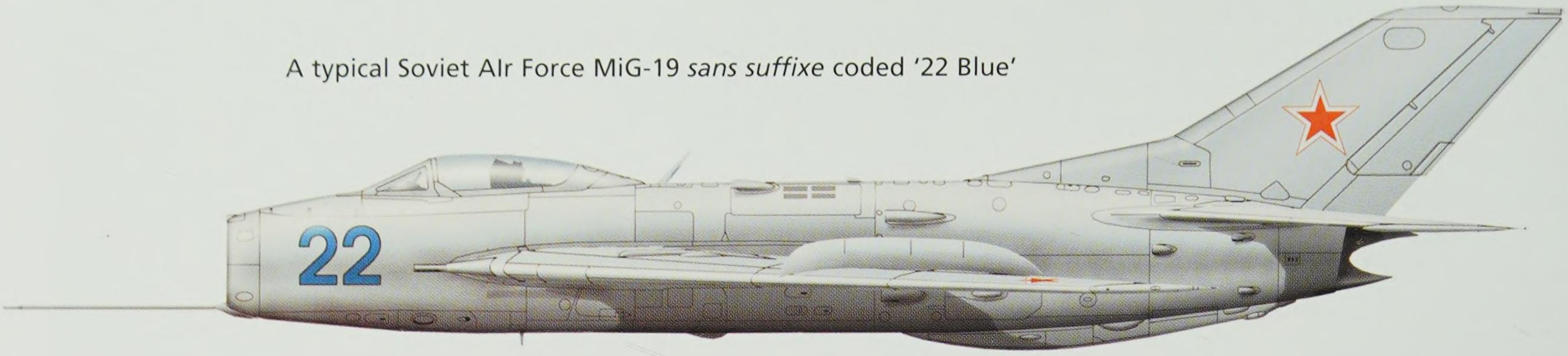
A trio of early-production MiG-19s making a flypast at the 1956 Tushino Aviation Day event.

end Charlie' could go as fast as 1,000 km/h (621 mph) or more. During practice sessions over the airbase the spectators on the ground gazed in horror as the flights would intermittently close in threateningly on the flight ahead or fall behind; in each flight the aircraft would wobble up and down as they hit wake turbulence from the fighters ahead, which was dangerous, considering that the distance between the aircraft in the flight was just 5-10 m (16-32 ft). Moreover, on return to base the fighters would be covered in soot from the smoky efflux of the jets ahead. Small wonder that after landing the pilots would be dripping with sweat and very nervous. The practice sessions culminated in a dress rehearsal which normally took place three or four days before the real thing. If the parade was to take place in Red Square, the fighters would pass over Leningradskiy Avenue and make a break short of Gor'kiy Street. It was easier if the parade was to be held at Tushino, where there were no spectators on ordinary days and the jets could pass over the airfield.

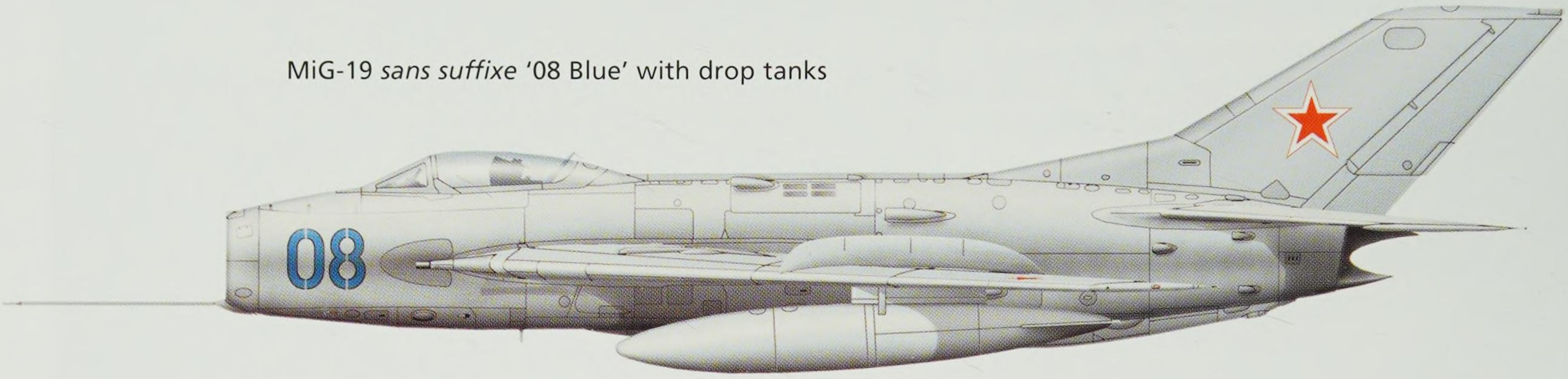
After the dress rehearsal the tech staff washed the fighters, fixed whatever malfunctions had occurred, refuelled the aircraft and charged the oil, hydraulic and pneumatic systems, whereupon the fighters would be inspected by a commission headed by the 9th IAD's chief of maintenance. The commission consisted of 10-15 men – the squadrons' chiefs of maintenance, the regiment's chief of maintenance and competent technicians. Each member of the commission would inspect the aircraft system that was his area of responsibility. Meanwhile, the *Or Else* hovered nearby – the political officers of the regiment and the division were ready to write down any compromising facts, while the top brass from the

A MiG-19 *sans suffixe* displays its arrow-like shape.

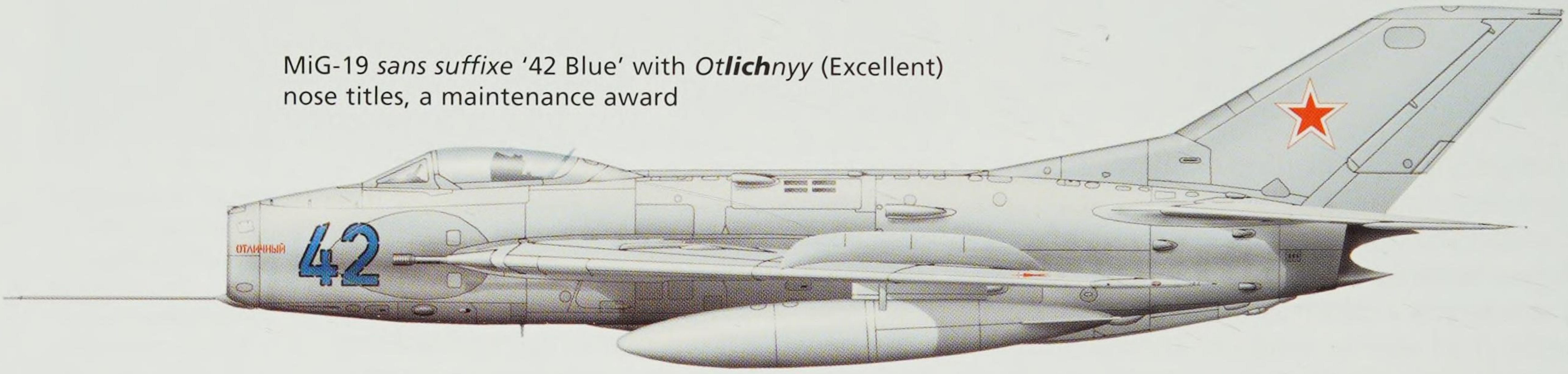
A Tactical Aviation pilot poses with his MiG-19.



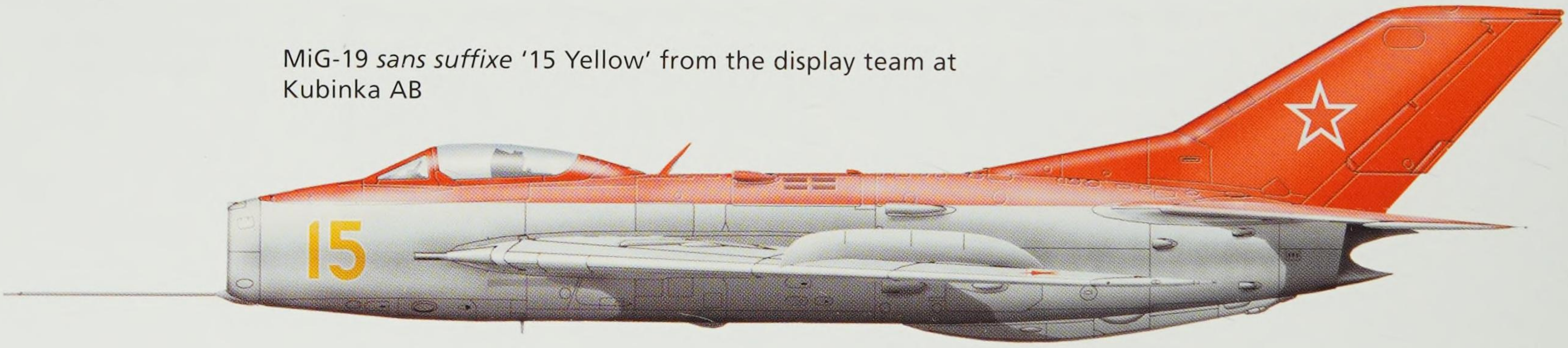
A typical Soviet Air Force MiG-19 *sans suffixe* coded '22 Blue'



MiG-19 *sans suffixe* '08 Blue' with drop tanks



MiG-19 *sans suffixe* '42 Blue' with *Ot***lich***nyy* (Excellent) nose titles, a maintenance award

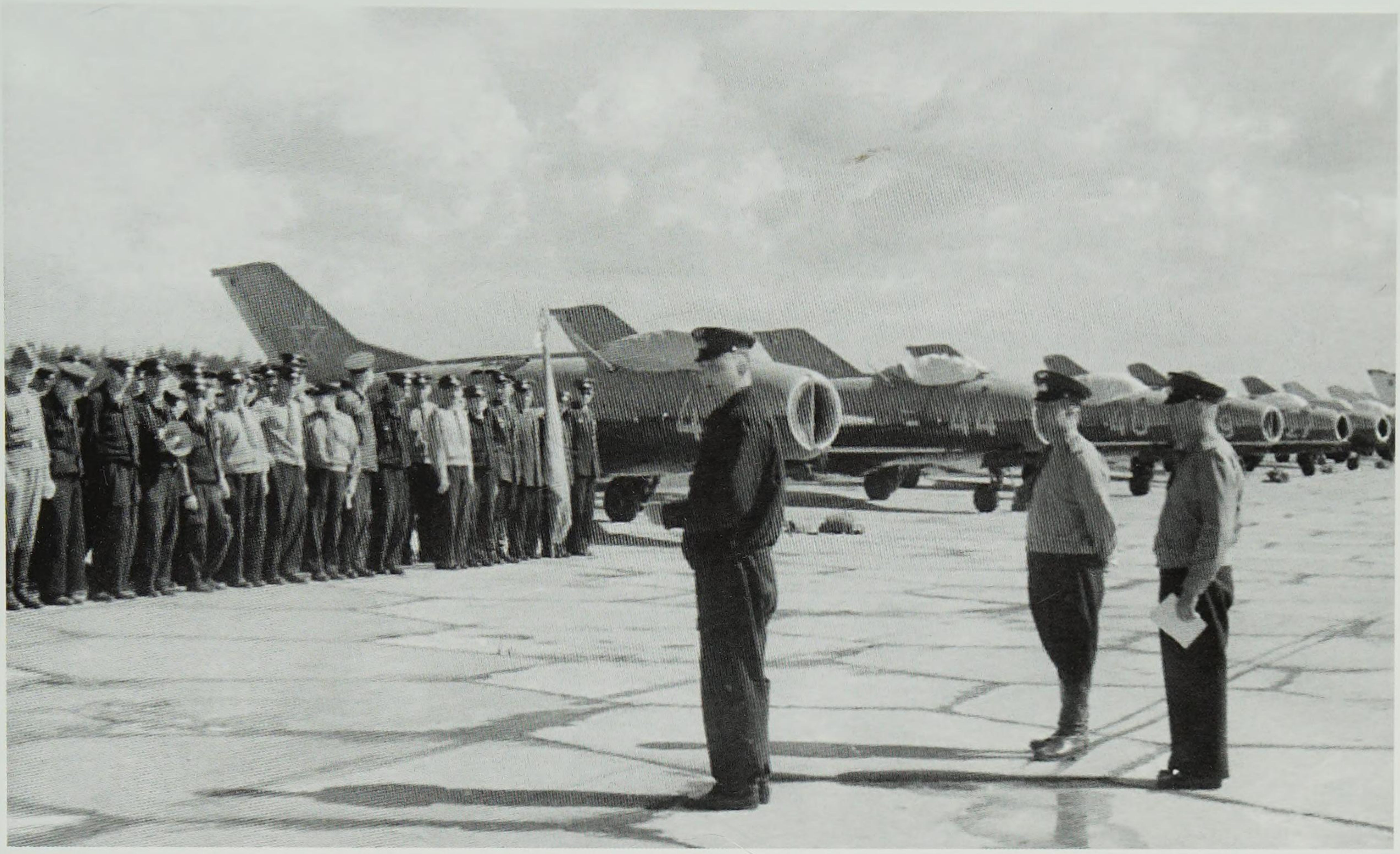


MiG-19 *sans suffixe* '15 Yellow' from the display team at Kubinka AB

Moscow MD (and, of course, the officers from the Special Department) stood close at hand. Once the commission was done with its work, the fighters were placed under wraps which were sealed by the chairman of the commission; the aircraft's regular technicians were barred from approaching it (this was enforced by the Special Department). Afterwards, the aircraft were guarded by armed sentries – cadets from the Serpukhov Military College who were taken to the airbase by coach.

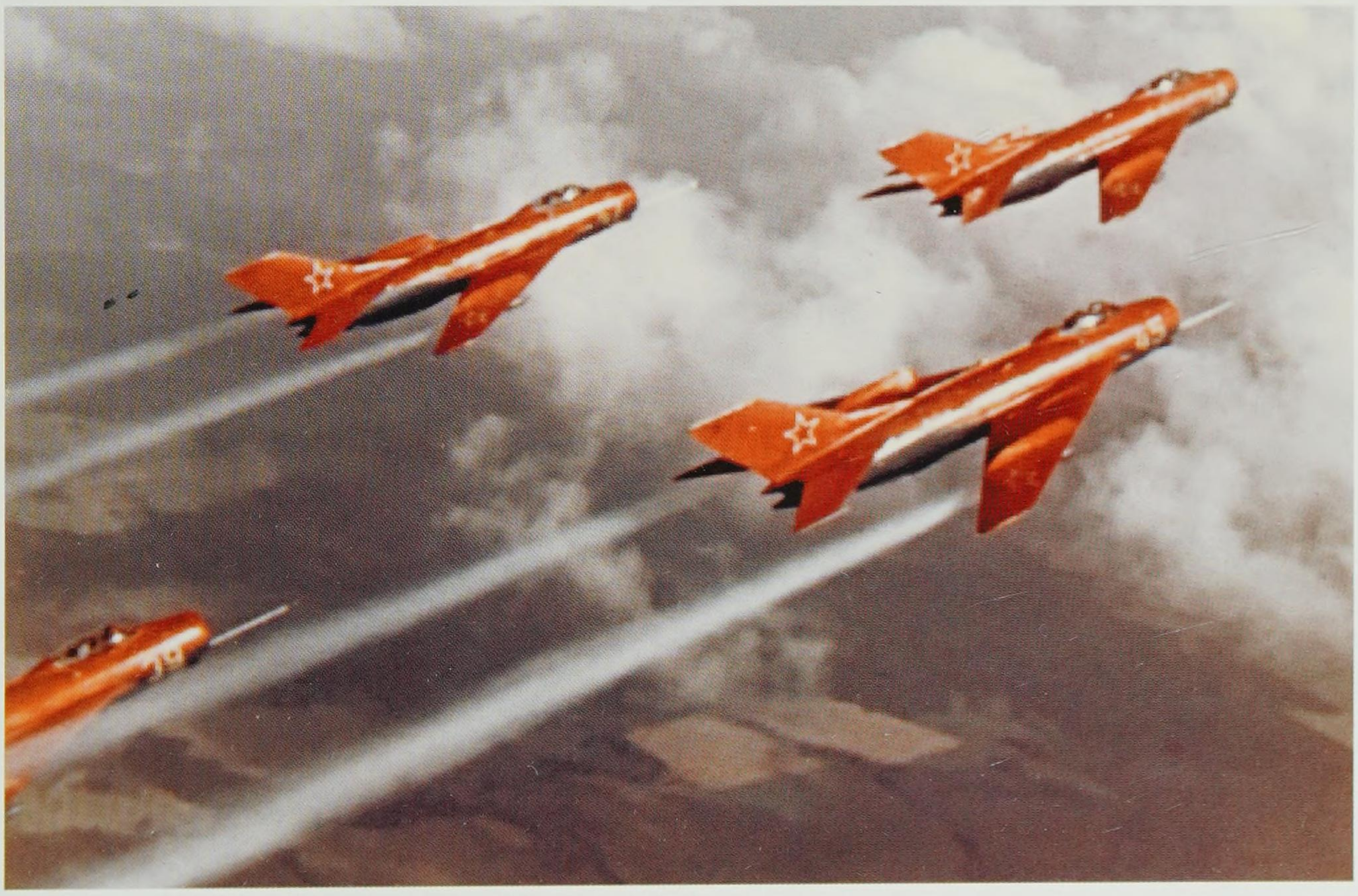
All this pandemonium took place three or four days before the event (or four to five days when Vasiliy Stalin was in command). The tech staff received a few days off and, of course, used the opportunity to the full; occasionally urgent measures had to be taken to hunt down a technician who had gone on a drunken spree because the aircraft could not be cleared for flight without his saying so. Yet, there were no accidents with alcohol-related causes.

On The Day, the parade normally began at 10 or 11 AM. The flypast was, so to say, the cherry on the cake; all three regiments of the 9th IAD would take part, and the 100-plus aircraft lined up in readiness for take-off would occupy half of Kubinka's runway. Everyone

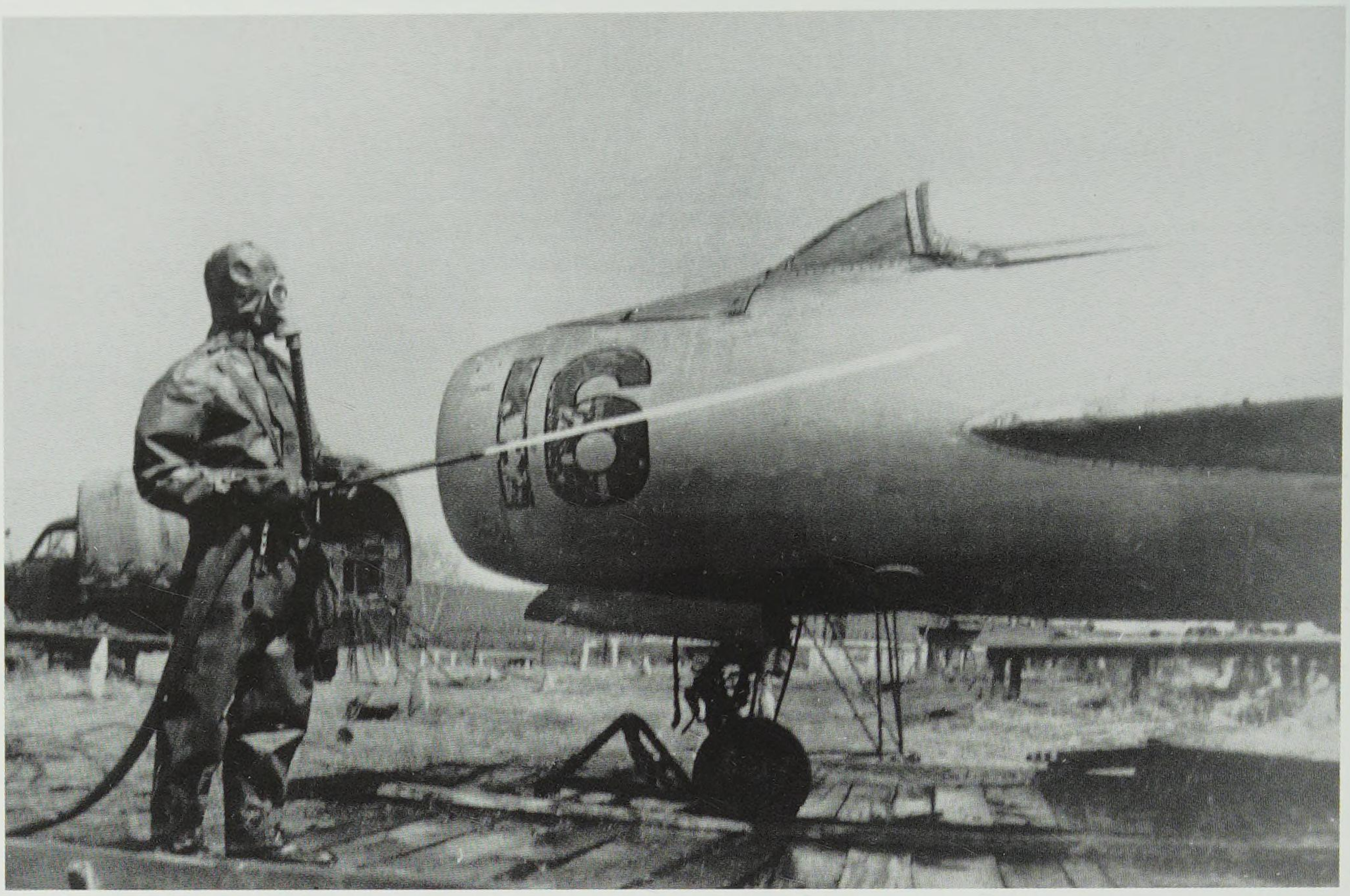


9th IAD personnel lined up at Kubinka AB for a festive occasion, with the red/silver MiG-19S fighters of the display team in the background.

and everything would be ready one hour before take-off, with the flying personnel standing by. 10 to 15 minutes before take-off the pilots would climb into the cockpits and strap in, all ground covers would be removed. The start-up of the whole armada would be commanded by the division's chief of maintenance standing beside the lead aircraft (as a rule, this was the division CO's aircraft); the commands – 'Remove ground covers', 'Get ready for start-up', 'Start-up' (almost in racing tradition – 'gentlemen, start your engines') were relayed down the line by the regiments' and squadrons' chiefs of maintenance. The 234th GvIAP display team invariably cranked up and departed first, followed five minutes



Trailing smoke from underwing smoke generator pods, four early *Farmer-Cs* from the Kubinka display team fly in diamond formation over the suburbs of Moscow.



'16 Red', a retired MiG-19S with cannons and pitot removed, found use as an airframe for NBC protection training. The 'elephant man' dousing the aircraft with deactivating solution is wearing the standard Soviet Army OZK NBC protection outfit.

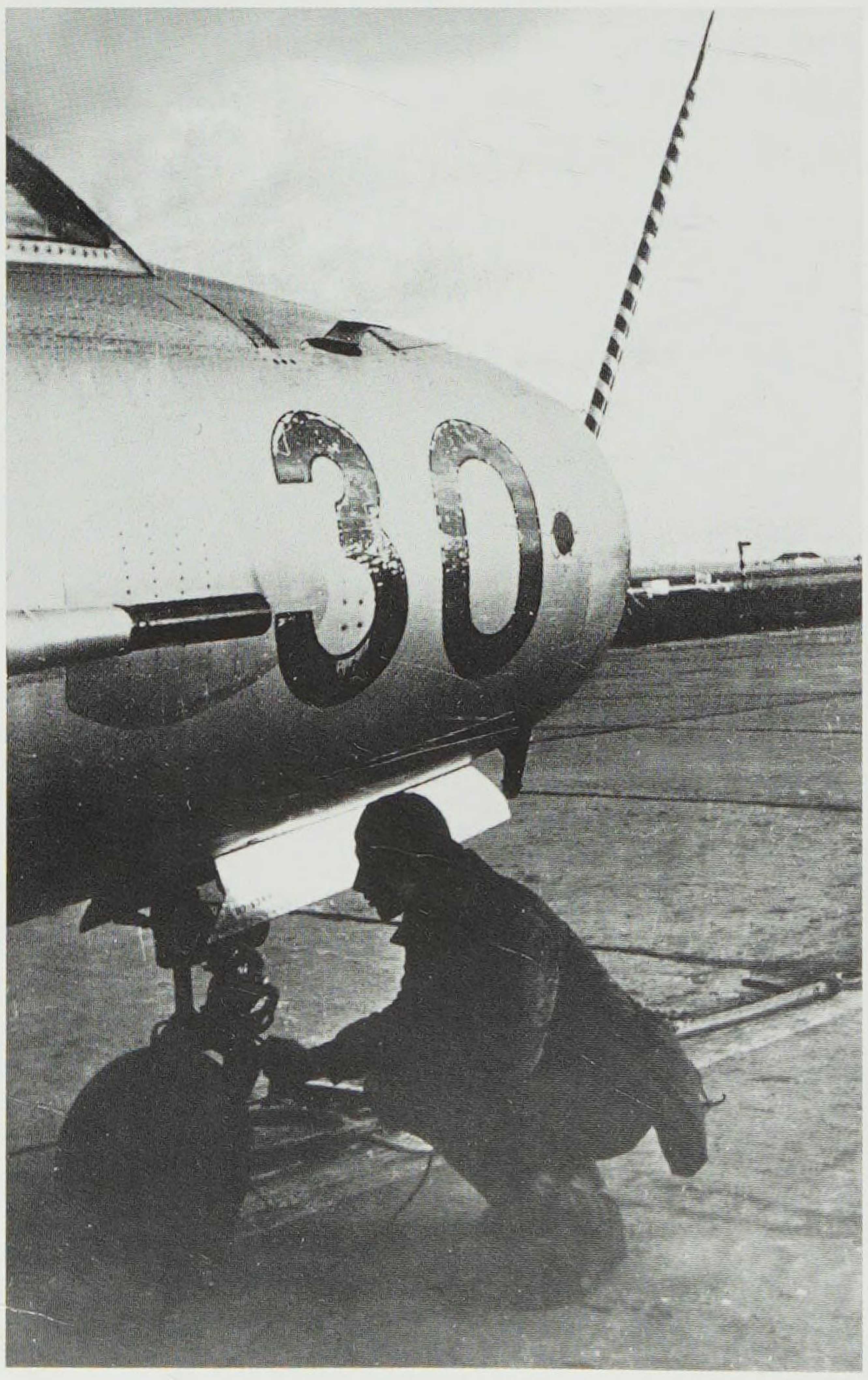
later by the 274th IAP, with the 32nd IAP always bringing up the rear.

This was the moment of truth; everyone hoped and prayed that the engines would start normally, and each pilot's and each technician's nerves were stretched to the limit. Occasionally the engines would start acting up, especially on the MiG-17 (due to faulty igniters) and on the MiG-19. In that case the aircraft in question would be removed from the runway and the entire flight of three would be barred from the flypast. As a rule, such incidents occurred at the practice phase but occasionally on the big day as well.

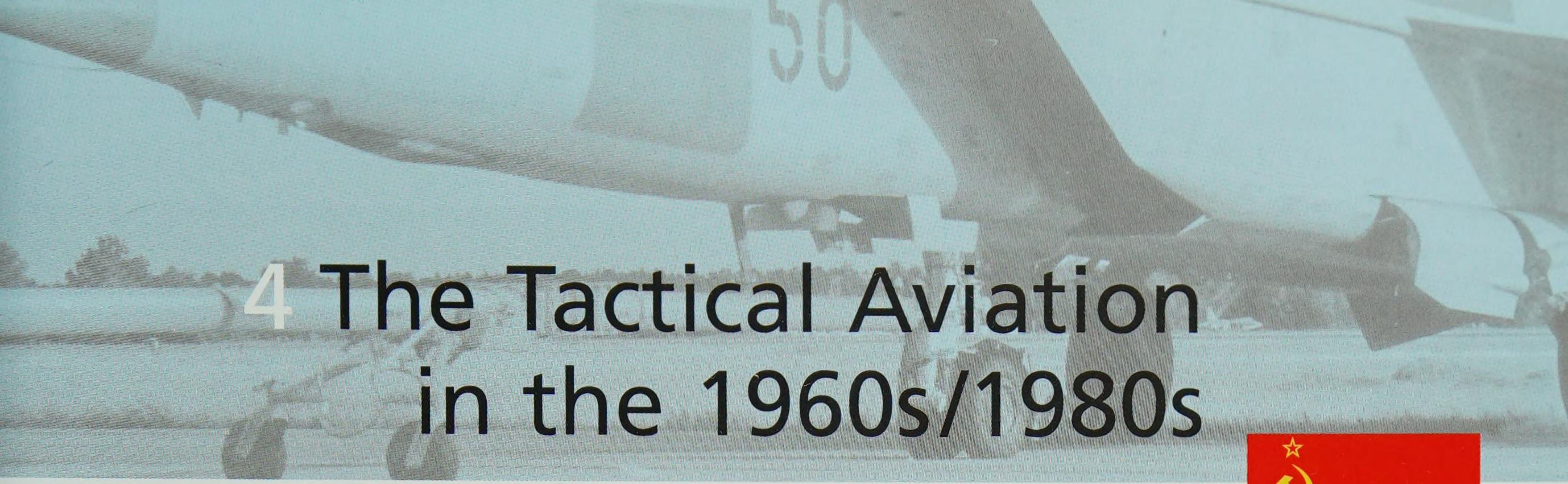
In reality there were few dramatic or tragic occurrences involving Tactical Aviation aircraft during such parades. On one occasion the fighters were towed to the runway with the in take covers in place; at the time the 'Remove covers' command had not yet been introduced, and the crew of one fighter forgot to remove the cover, the engine being damaged in the ensuing failed startup.

In early August 1955 a young MiG-19 pilot from Kubinka, Lt. Konstantin Kuznetsov, crashed fatally during the last-but-one rehearsal of that year's Aviation Day flypast. As the fighter formation streaked towards Tushino at low altitude, Kuznetsov's aircraft hit wake turbulence and lost control, colliding with the ground.

Yet, as noted earlier, by the end of the 1950s the Soviet government, and first of all the nation's leader Nikita S. Khrushchov, had contracted the 'missile itch', deciding that ballistic missiles could replace manned combat aircraft. Entire combat-ready divisions of quite modern aircraft were decommissioned and serviceable aircraft were consigned to the scrap heap. This caused untold damage to the Soviet Air Force, putting an end to its 'golden age'.



A technician hooks up a towbar to '30 Blue', a Novosibirsk-built MiG-19S with NR-30 cannons sans muzzle brakes. Note the 'barber's pole' red/white stripes on the pitot.



4 The Tactical Aviation in the 1960s/1980s

The year 1959 marked the beginning of a new era in the history of the Soviet Air Force's Tactical Aviation. That was the year when the MiG-21F *Fishbed-C* fighter and Su-7B fighter-bomber entered service. With the former type, the aforementioned 9th IAD at Kubinka AB led the way; the MiG-21F's evaluation in the 32nd GvIAP began in late November 1960. This included a detachment by five MiG-21Fs to the GK NII VVS test facility in Akhtoobinsk (Vladimirovka AB) for operational evaluation under the Air Force C-in-C's plan. An individual test programme was drawn up for each of the aircraft. The programmes capitalised on weapons training, and on one occasion a pair of MiG-21Fs almost shot themselves down! The plan was to simulate a gunnery attack in a 30° climb. Having expended the ammunition in a long burst, the fighters recovered to level flight, and then suddenly their own projectiles started exploding 300-350 m (980-1,150 ft) ahead of them; the projectiles had followed a ballistic trajectory and started self-destructing just as the fighters caught up with them! To avoid such incidents in the future, further live-fire sorties followed a modified scenario.

In the summer of 1961 the 9th IAD demonstrated its latest aircraft – MiG-21F-13 *Fishbed-Cs* armed with R-3 (AA-2 *Atoll*) AAMs – during the Aviation Day air parade in Tushino. As usual, the spectators were duly impressed, especially the western observers who had not expected so large a number of advanced Soviet jet aircraft. Preparations for the parade began in July; the Commander of the 9th IAD, Gen. A. V. Astakhov, headed the column on a MiG-21F-13 – he was the leader of the first 'vic'. The second 'vic' was led by Lt.-Col. Shibanov, the CO of the 32nd GvIAP, with the third 'vic' headed by Maj. Karamushka. The separation between the flights was 500-700 m (1,640-2,300 ft). The flypast of the group was followed by an aerobatic display team of the 234th GvIAP.

Maintaining the correct distance turned out to be the hardest part. During the early training sorties, the formation behaved like a concertina, the flights coming too

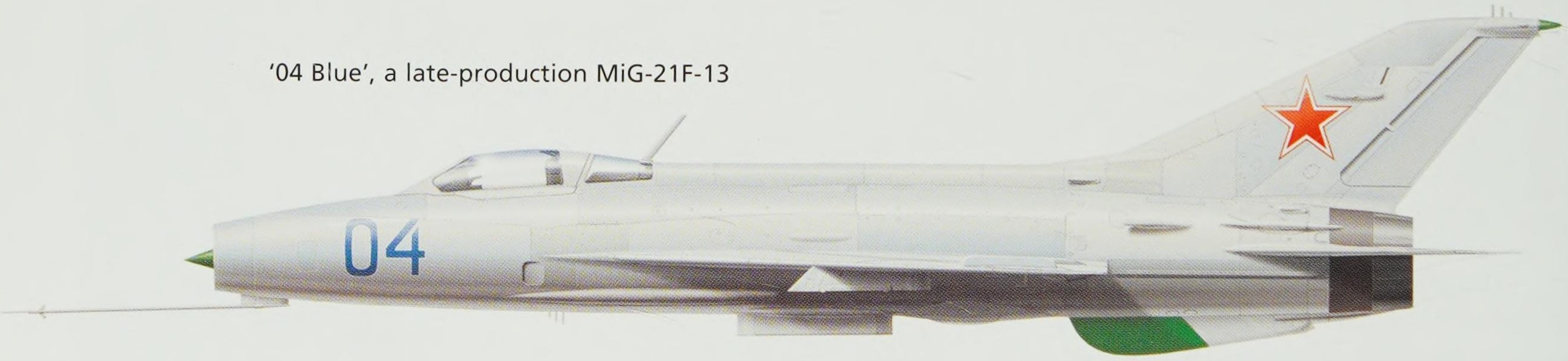
Previous page: Pilots of an FA fighter squadron walk past their MiG-23Ms.

A quartet of Soviet Air Force MiG-21F-13s fitted with UB-16-57 FFAR pods taxies out for a formation take-off at Kubinka AB.

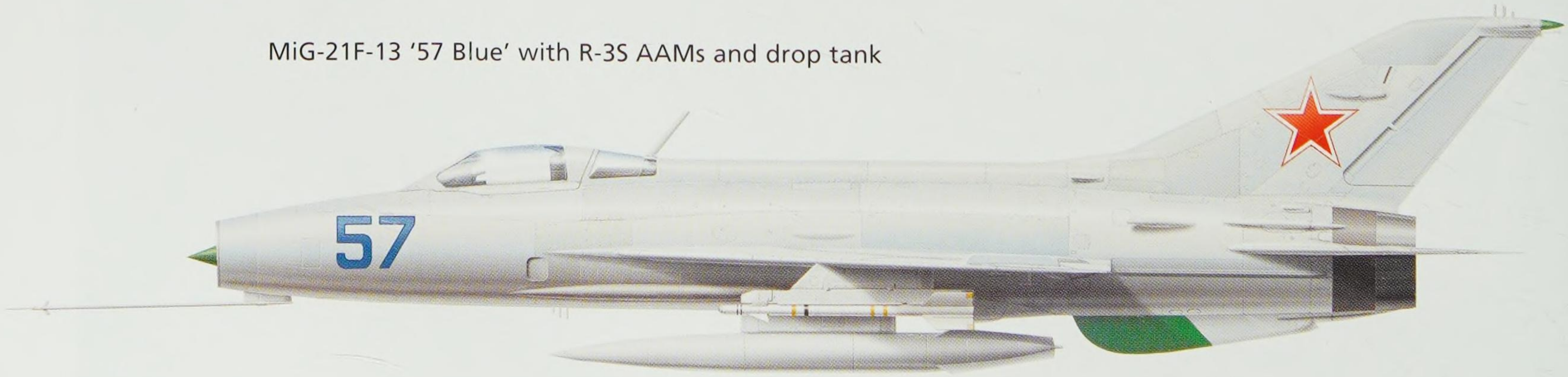
close to the one ahead or lagging too far behind, especially when approaching Tushino when the leading 'vic' accelerated. The speed over Tushino airfield was 1,000-1,100 km/h (621-683 mph). Each training sortie was be filmed, and the films were shown to the pilots during debriefing. To maintain the distance, the pilots had to use the air brakes. At this close range, the MiG-21s created a lot of wake turbulence which would kick any aircraft entering it out of the formation. This happened with pilot Barmenkov during the dress rehearsal of the parade – actually after the formation had passed over Tushino and started climbing. The fighter was propelled upwards and to the left about 200 m (660 ft) before you could say knife; fortunately, this time the pilot was able to regain control.

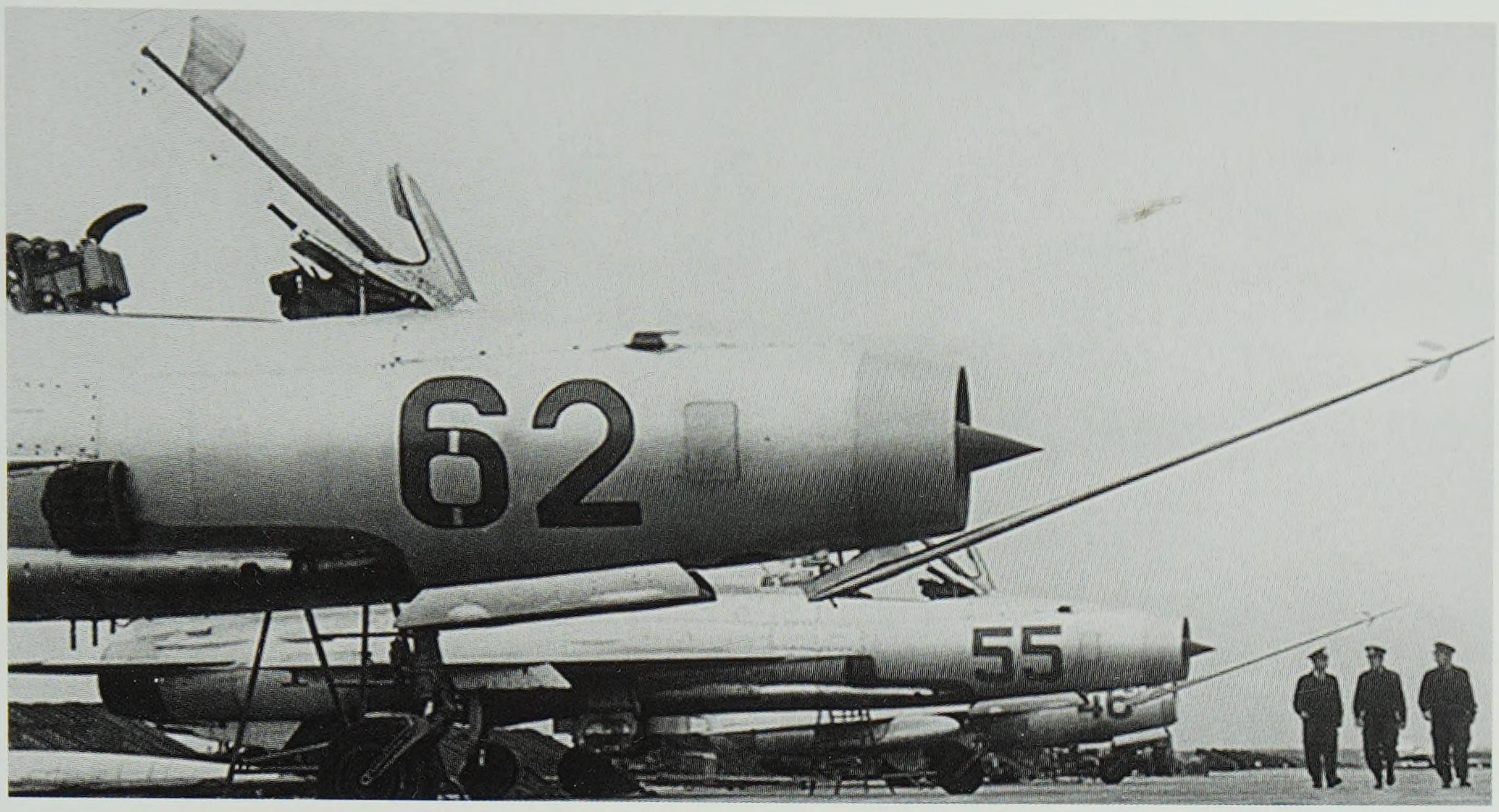
Meanwhile, new versions of the *Fishbed* were entering production and service. First-line units operating it were facing problems. Operation of MiG-21PF interceptors in air-to-

'04 Blue', a late-production MiG-21F-13

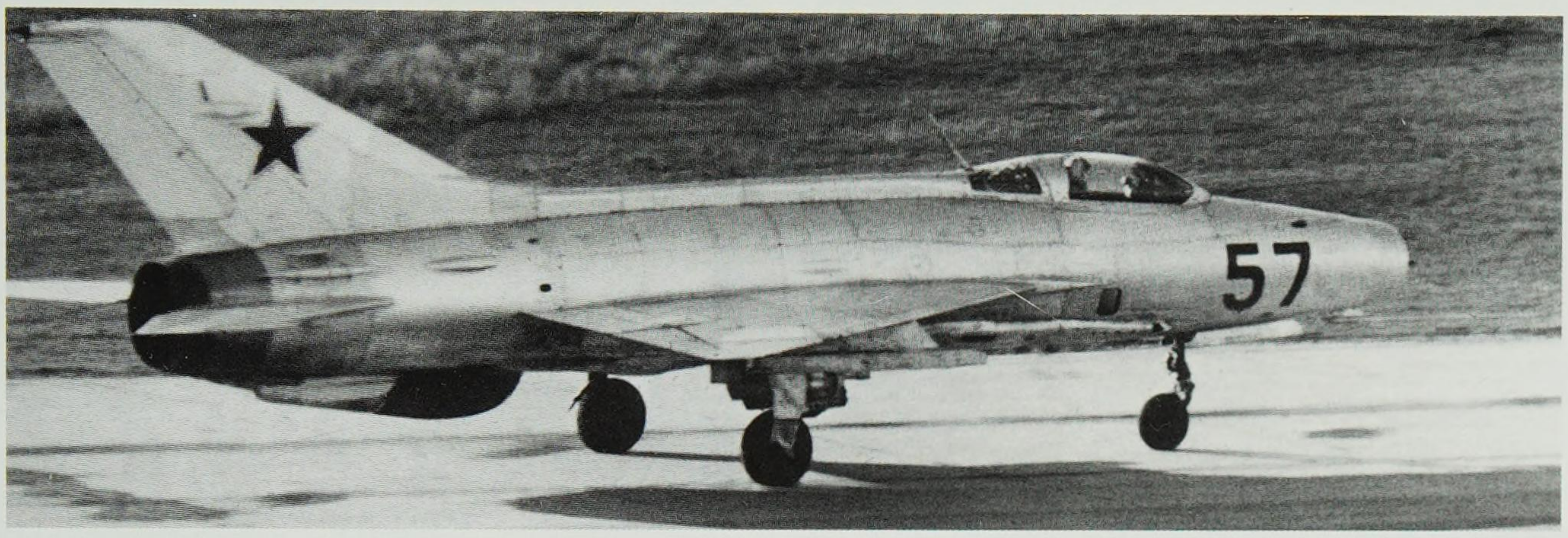


MiG-21F-13 '57 Blue' with R-3S AAMs and drop tank

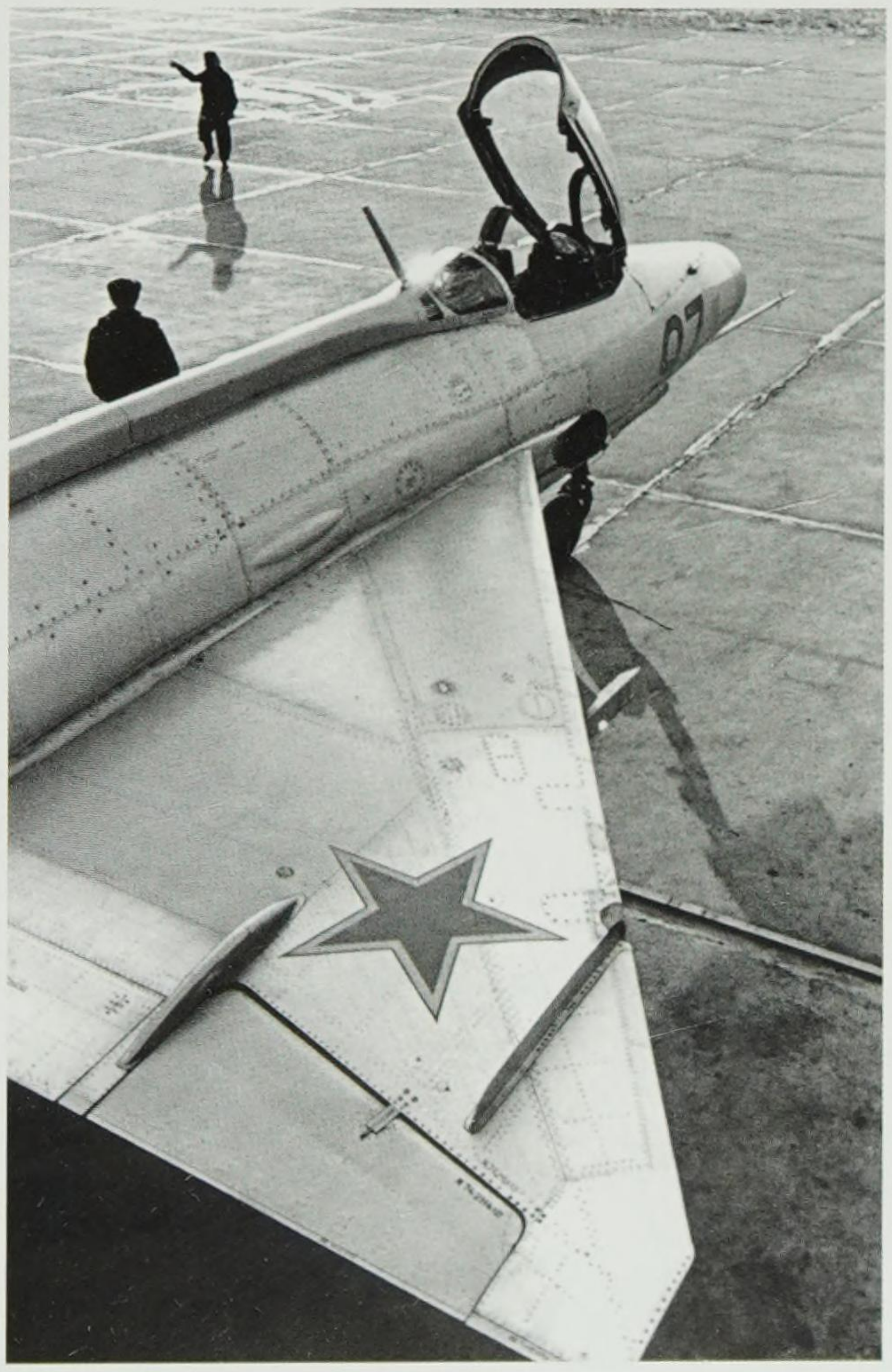




A flight line of MiG-21F-13s, with a lone UTI MiG-15 trainer at the far end. Note the pitot booms tilted to avoid ground damage and the ground covers over the auxiliary blow-in doors.



A late-production MiG-21F-13 with the new wide-chord vertical tail.



This view of MiG-21F-13 '97 Blue' shows the enlarged rear transparency of the revised canopy characteristic of late production *Fishbed-Cs*. It also shows the wing shape clearly.

ground mode had been restricted by March 1964 due to engine flameouts during launch of FFARs at combat power settings, an underdeveloped weapon system and ineffective sights. There were seven MiG-21F-13 accidents in 1961, three of them being caused by design flaws or manufacturing defects, and 19 more in 1964. Most accidents were caused by engine failures, the R11F-300 initially having a poor reliability record. Ground crews complained of the fighter's poor maintainability – maintenance was indeed very difficult. An engine change was quite a big event and took a long time, and access to equipment items was poor.

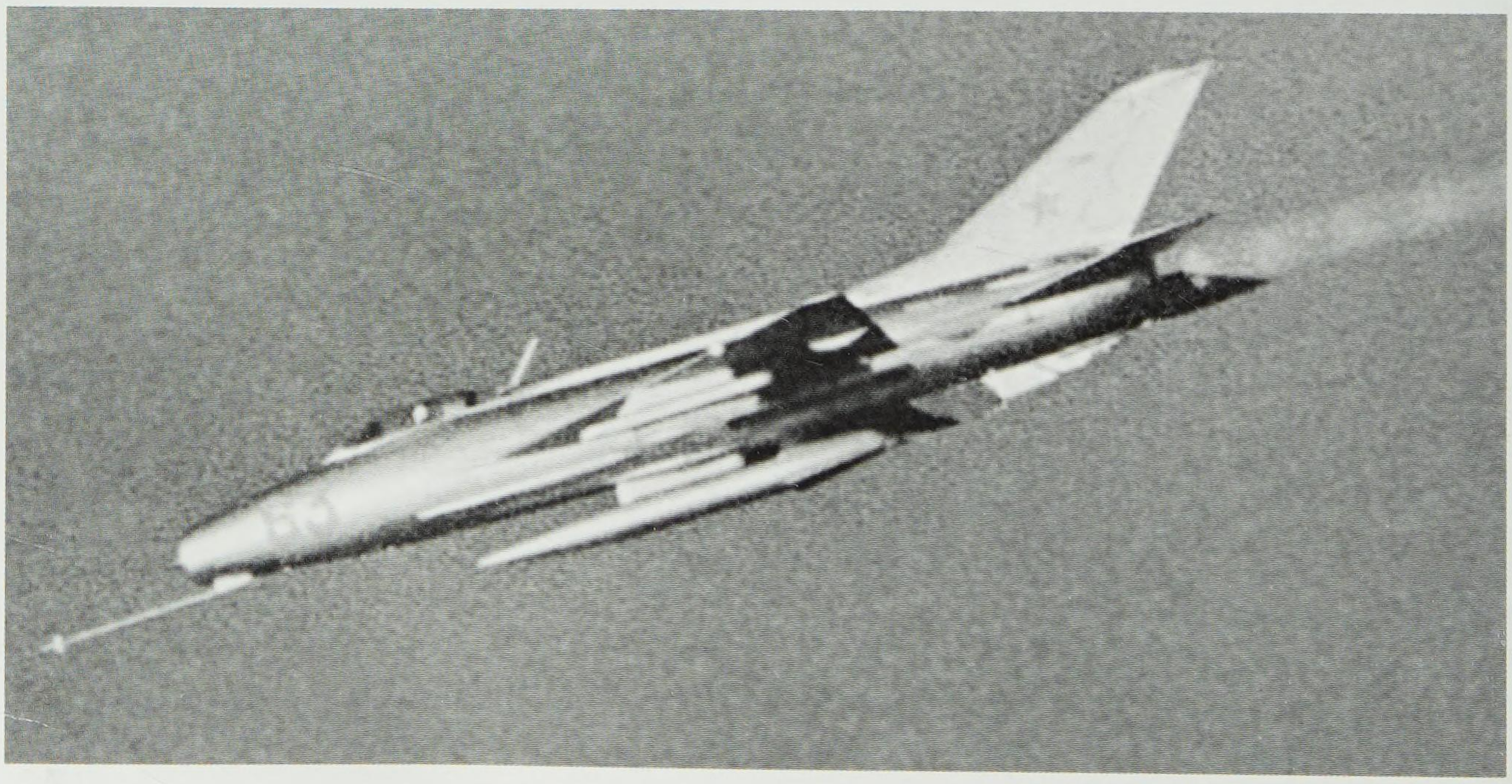
As the early-production MiG-21PF *Fishbed-D*, MiG-21PFS *Fishbed-F* and MiG-21PFM *Fishbed-F* interceptors were ousted by more advanced versions – the MiG-21S *Fishbed-J*, MiG-21SM *Fishbed-J* (which introduced a new Tumanskiy R13-300 engine offering more power and better surge resistance) and MiG-21*bis* *Fishbed-L/N*, which also saw Air Force service – those aircraft which still had enough service life remaining were handed over to fighter-bomber regiments or Air Force

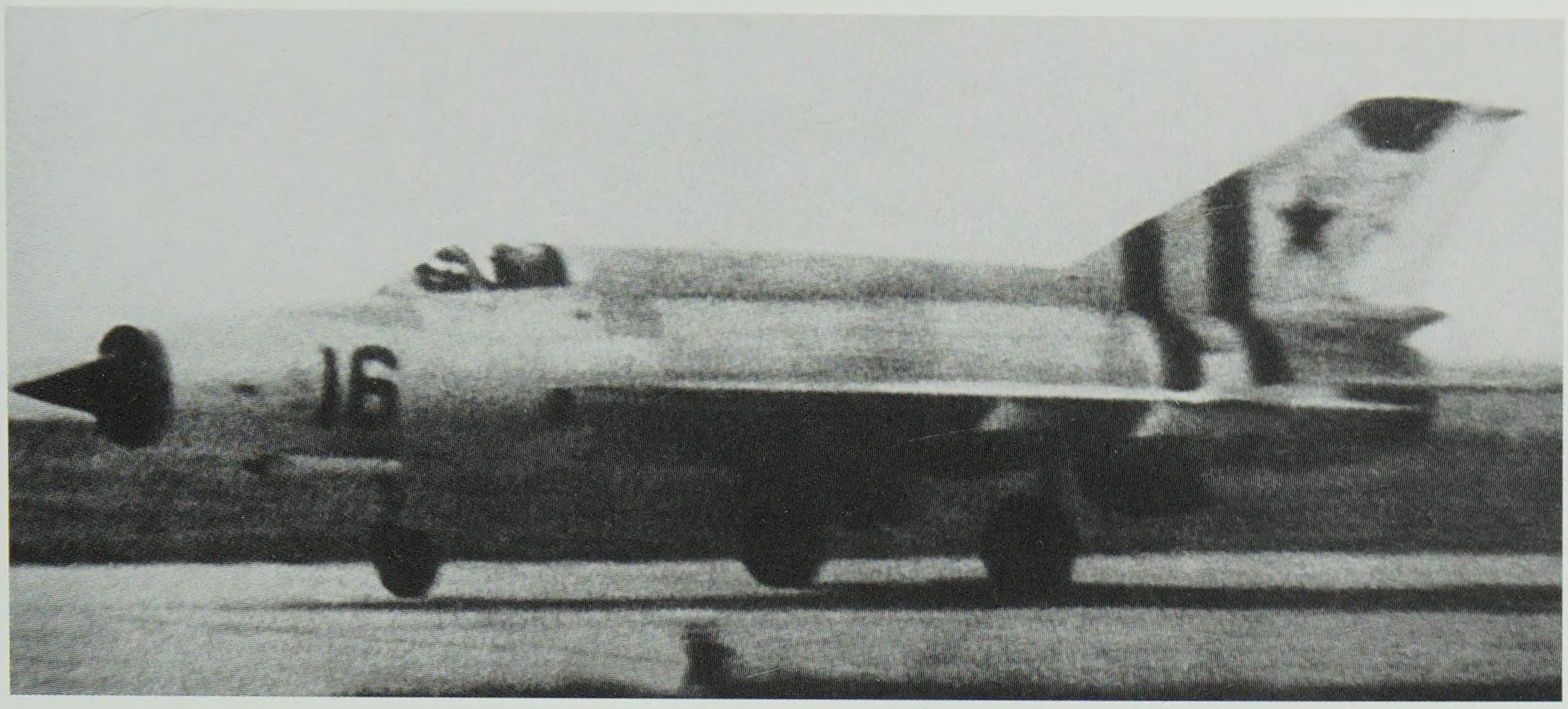
A typical publicity photo of two jet fighter pilots in full attire discussing a successful mission in front of a MiG-21F-13 fitted with UB-16-57UM FFAR pods.

academies. For instance, MiG-21PFMs saw service with the 136th APIB (*avia***polk** *istre***bit***eley-bombardi***rov***shchikov* – Fighter-Bomber Regiment) and the 50th OSAP (*ot***del'***nyy* **smesh***annyy* **a***via***polk** – Independent Composite Air Regiment), both of which fought in the Afghan War (see Chapter 7). The former interceptors flew, among other missions, suppression of enemy air defence (SEAD) and ground attack sorties.

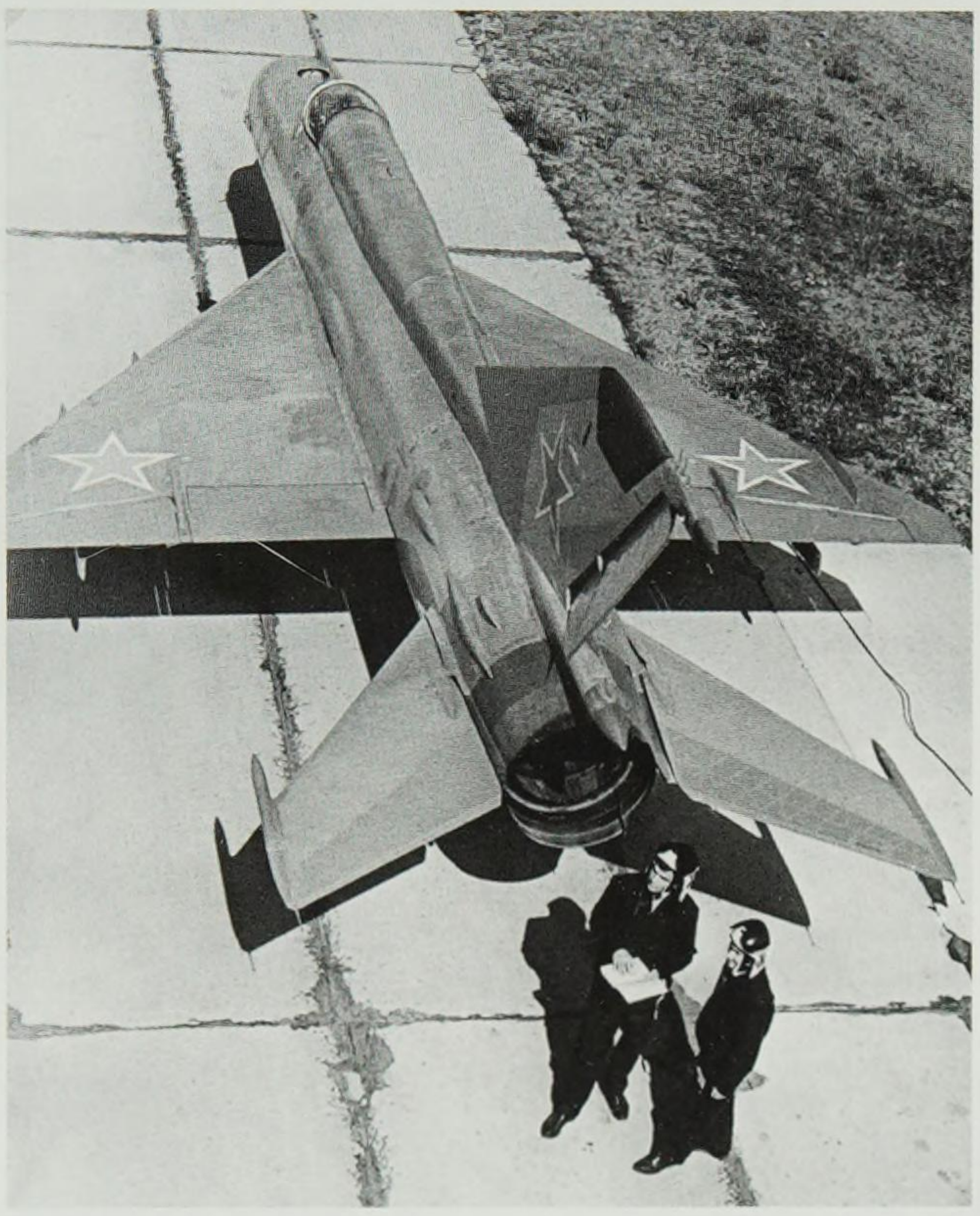
An early-production MiG-21F-13 with the narrow-chord vertical tail 'cleans up' after take-off.

A MiG-21F-13 with a drop tank belches flames as it accelerates in full afterburner.





This MiG-21S was among the Soviet aircraft used in the invasion of Czechoslovakia in 1968, hence the red stripes.

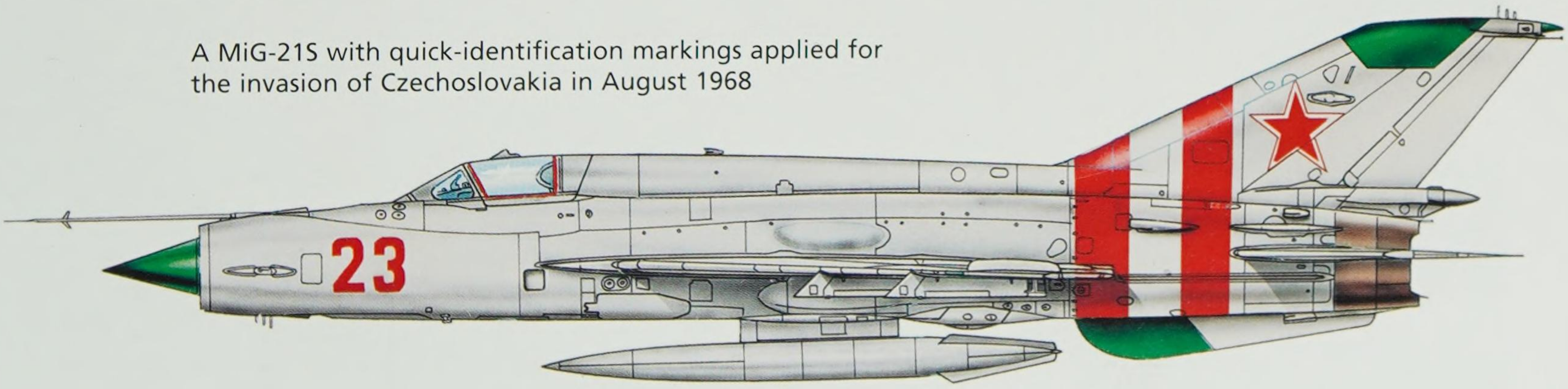


A publicity shot of a Soviet Air Force MiG-21S from a somewhat unusual perspective.

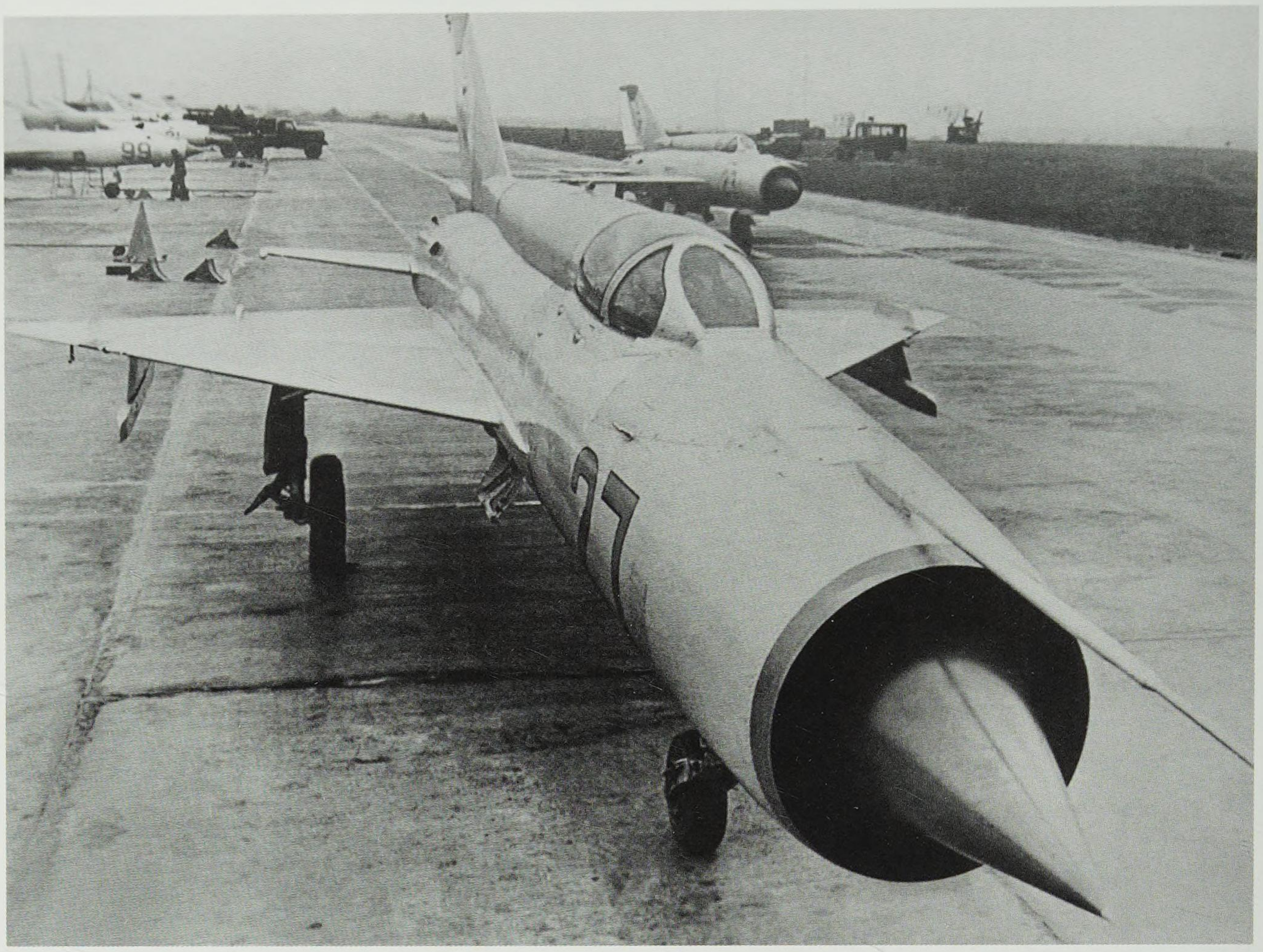
The 234th GvIAP at Kubinka also re-equipped with advanced fighters. These were MiG-21MF *Fishbed-Js* – an export version of the MiG-21SM not intended for the Soviet Air Force; they were issued to the regiment because Kubinka AB was where new Soviet aircraft were demonstrated to prospective foreign customers. On 9th June 1971 the 234th GvIAP's MiG-21MFs made a goodwill visit to Reims-Champagne AB, France, which hosted the EC 03.033 'Lorraine' fighter squadron. In July 1977 the pilots of EC 02.030 'Normandie-Niémen' fighter squadron – a famous unit that had fought alongside the Soviet Air Force during the Great Patriotic War – paid a visit to Kubinka where they had an opportunity to examine the latest production version of the *Fishbed*, the MiG-21*bis*. A year later, MiG-21*bis* fighters paid a reciprocal visit to France and also visited Kuopio-Rissala AB in Finland.

The Soviet Air Force fighter regiments became more combat-capable once they converted to the MiG-21S and especially to the MiG-21SM which, unlike the former, not only carried four R-3S AAMs but had a built-in cannon as well. Pilots who had converted to the MiG-21SM from the MiG-21PF, MiG-21PFM or MiG-21S tended to forget about the cannon because the older variants lacked it and the GP-9 gun pod introduced on the MiG-21PFM was seldom carried. It is worth mentioning a uniquely revealing episode in the MiG-21's combat career which took place on 28th November 1973. A MiG-21SM piloted by Capt. Ghennady N. Yeliseyev scrambled from Vaziani AFB in Georgia to intercept an Imperial

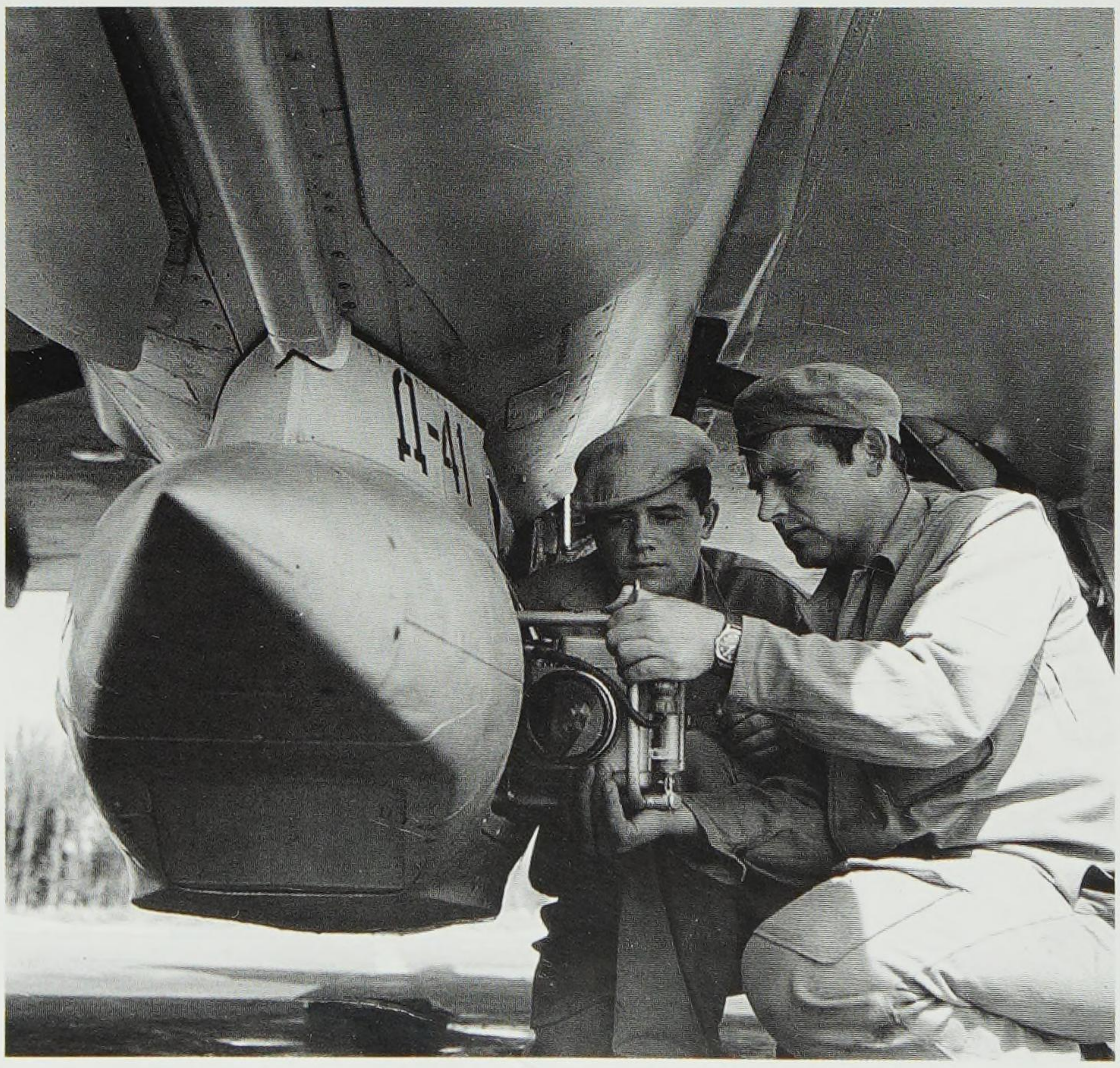
A MiG-21S with quick-identification markings applied for the invasion of Czechoslovakia in August 1968



Early-production Soviet Air Force MiG-21R reconnaissance aircraft with centrally mounted pitots.



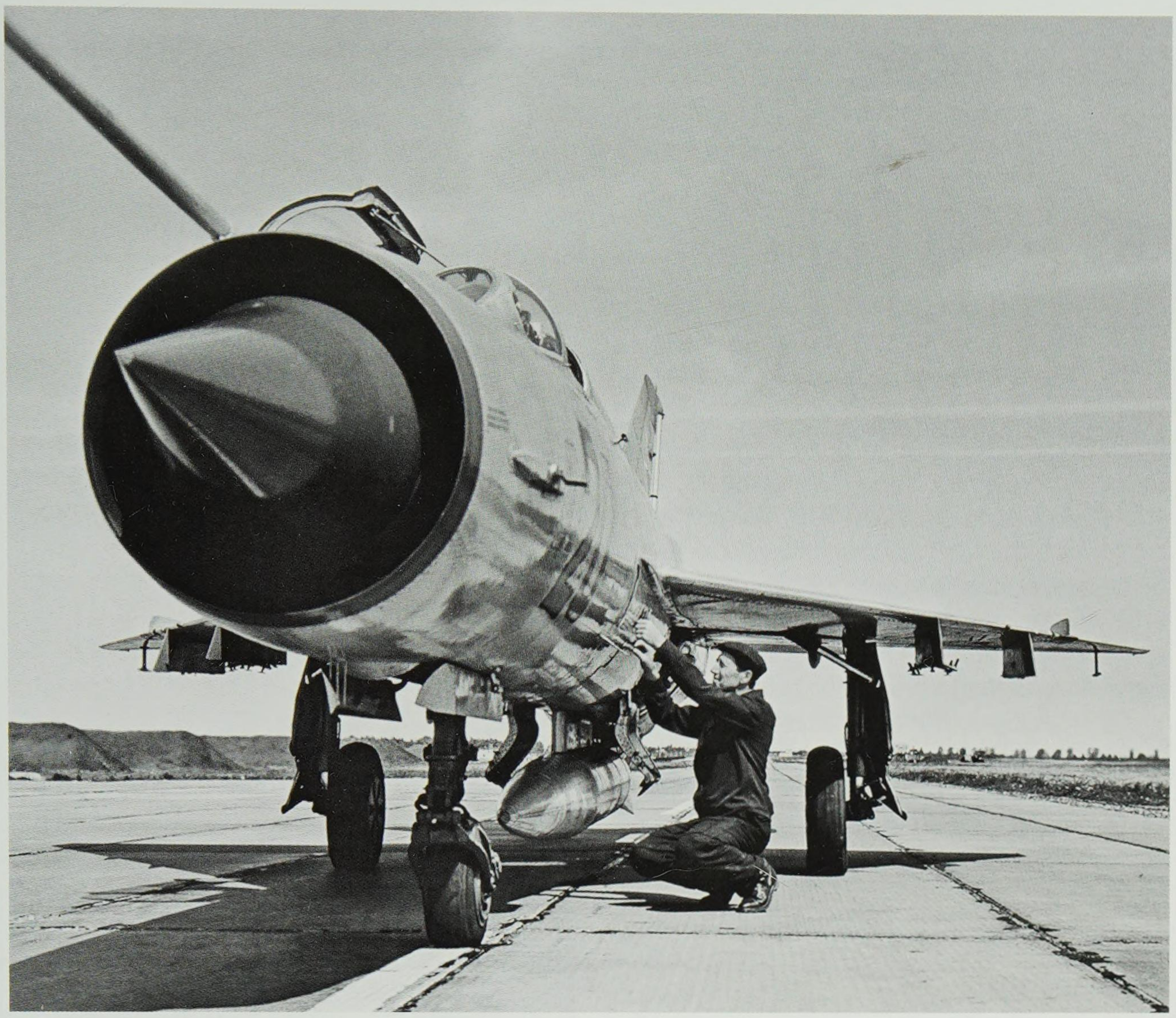
Technicians install a camera in a Type D pod of a MiG-21R. Note the door protecting the forward camera port and the conduit ahead of the pod.



Iranian Air Force aircraft that had entered Soviet airspace in the vicinity of the Mugan Valley (Azerbaijan). Yeliseyev caught up with the intruder when it was very close to the border. The regimental command post ordered the intruder destroyed at all costs, even through radar displays showed there was not enough time for Yeliseyev to use air-to-air missiles. It is possible that the pilot simply forgot in the heat of the moment that his aircraft had a cannon (incidentally, this was the regiment's sole *Fishbed* with the built-in cannon). This is why, in a desperate attempt to prevent the intruder from escaping, he rammed the Iranian aircraft with the wing of his fighter – whether at his own initiative or following orders from the CP. Both aircraft went down in a shower of debris; Yeliseyev perished and was posthumously awarded the HSU title, while the intruder's crew survived.

The 'fatback' MiG-21SMT *Fishbed-K* fielded with several air regiments in the MiG-21SM's footsteps was not a success because its heavy fuel load led to inferior manoeuvrability and handling, and complaints about the aircraft would be addressed to the Air Force's senior officers every now and then. Hence most of the MiG-21SMTs were converted to MiG-21ST standard by fitting a smaller saddle tank, becoming virtually identical outwardly to the MiG-21*bis*, which had just begun to enter service (the Tactical Aviation version was the *Fishbed-L*). The arrival of the MiG-21*bis* heralded a new era in Soviet fighter aviation.

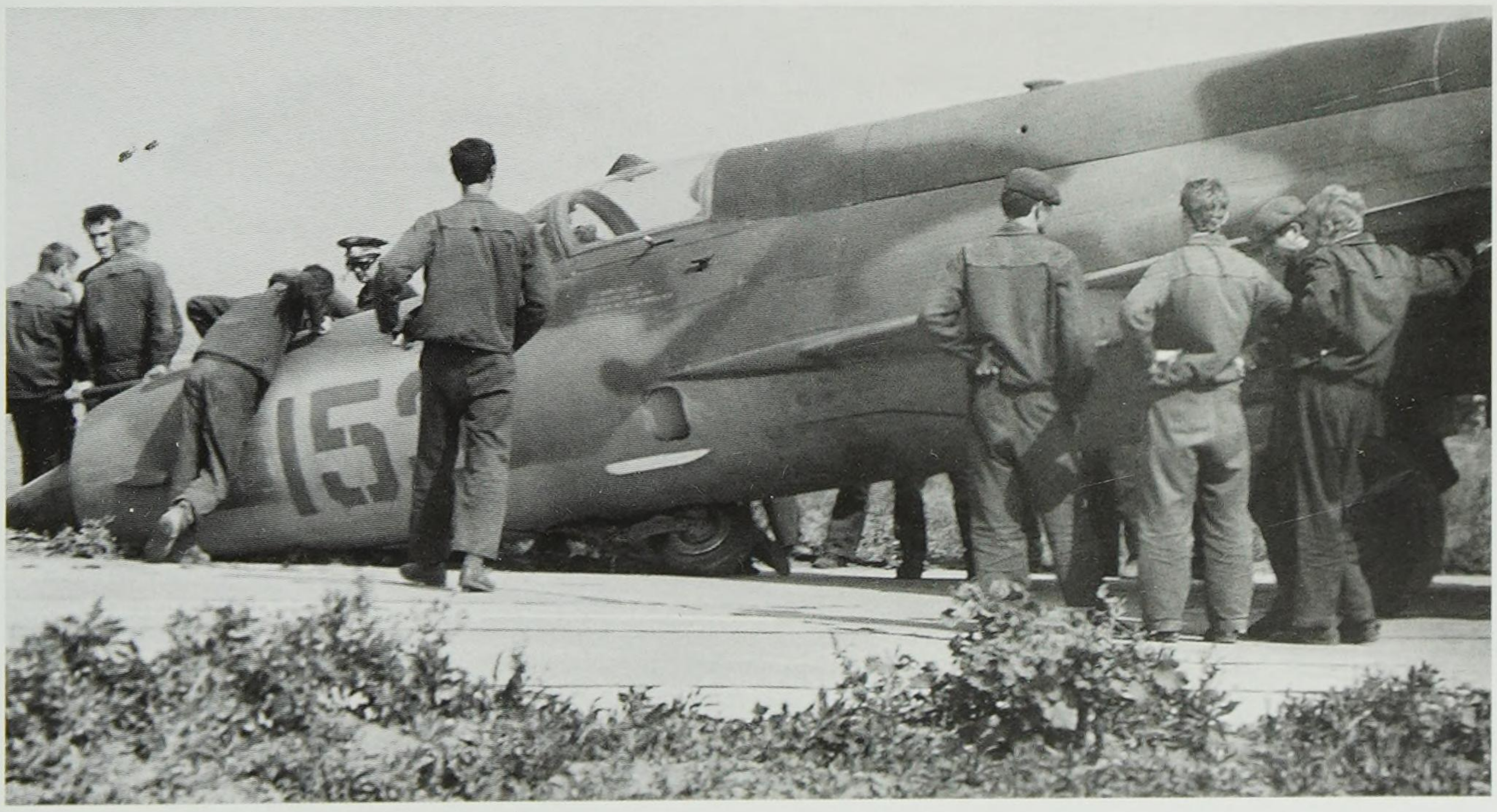
The MiG-21*bis* representing the third generation of the *Fishbed* was probably the most refined version of the fighter. It was popular



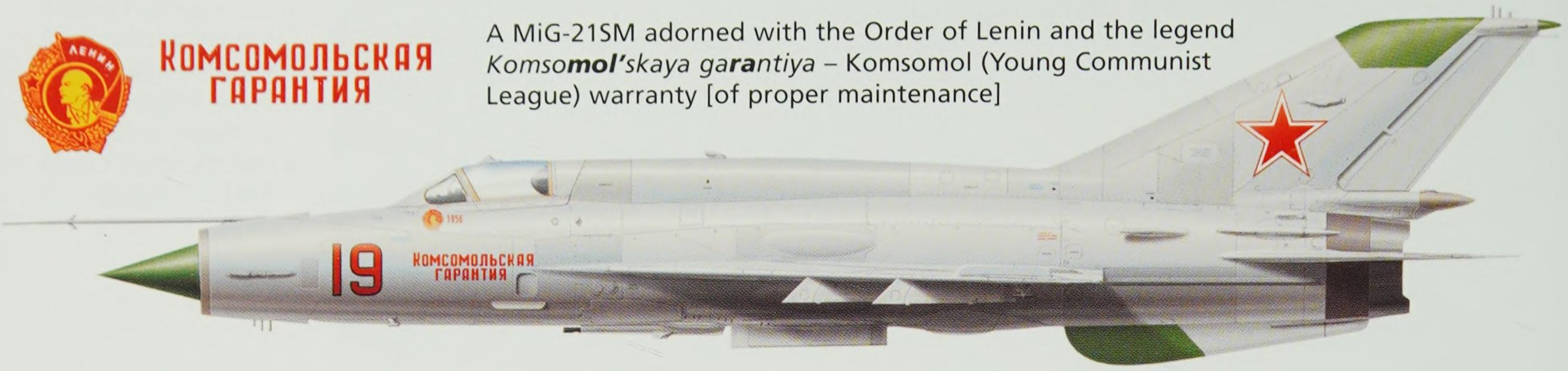
One of the 'black men' (technicians clad in regulation black fatigues) performs daily maintenance on a MiG-21S fighter.

with the pilots, and rightly so. Having retained the handling characteristics of the early interceptors, it was far more combat-capable owing to its more sophisticated avionics and weapons suites and the new, more powerful Tumanskiy R25-300 afterburning turbojet. With the MiG-21*bis* the Soviet Air Force finally had a fighter that was believed to be on a par with the most advanced USAF warplanes of the time.

Another important version operated by the Tactical Aviation was the MiG-21R *Fishbed-H* ([*samo***lyot**-] *raz***ved***chik* – reconnaissance aircraft), the reconnaissance version of the MiG-21PFM. Powered by an R11F2S-300 engine or, in late production batches, by an



MiG-21SM '153 Red' operated by a Russian Air Force pilot college suffered a nose gear collapse after a hard landing.

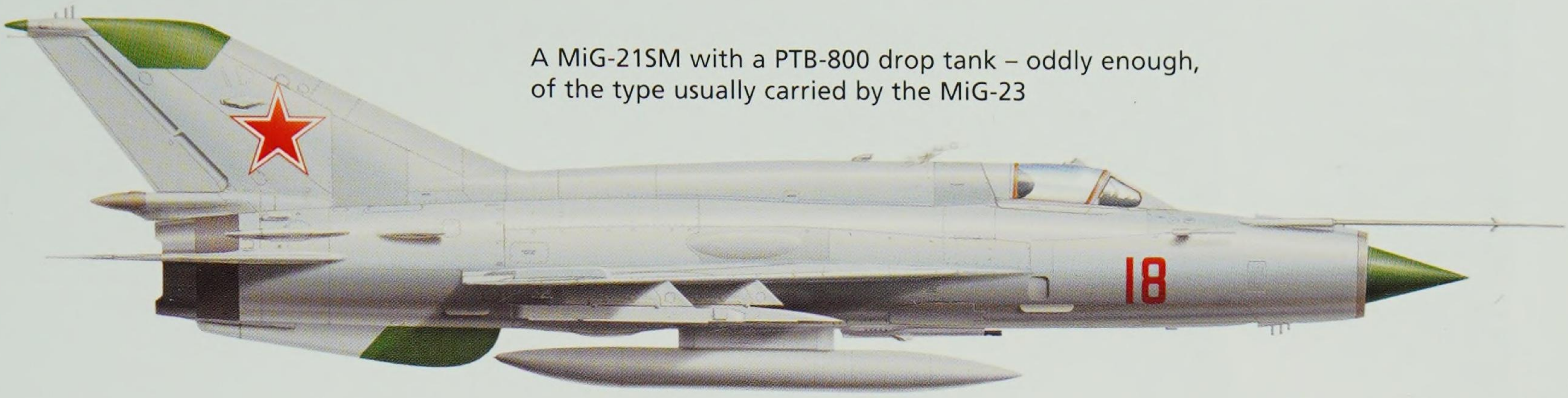


A MiG-21SM adorned with the Order of Lenin and the legend *Komso**mol'**skaya ga**ra**ntiya* – Komsomol (Young Communist League) warranty [of proper maintenance]

R13-300 afterburning turbojet, the MiG-21R could carry three interchangeable mission equipment pods allowing the aircraft to be configured for daylight or night photo reconnaissance (PHOTINT), electronic intelligence (ELINT), laser imaging, infrared imaging (IRINT) and TV imaging. The Type D pod (for *dnev**na**ya **fot**oraz**ved**ka* – daylight PHOTINT) featured a tape recorder for capturing relevant air-to-ground radio communications, two oblique AFA-39 cameras, four AFA-39 cameras for vertical photography and an AFA-5 slit camera. The Type N pod was intended for night PHOTINT (hence the N for *noch**na**ya **fot**oraz**ved**ka*), accommodating a NAFA-47 camera and 188 illumination flares whose flash automatically triggered the camera shutter. Finally, the Type R pod was optimised for ELINT (hence the R for ***rah**diotekh**nich**eskaya raz**ved**ka*), housing Romb-4A and Romb-4B (Rhombus, or Diamond) ELINT packs plus an AFA-39 camera for documenting the location. The MiG-21R was one of the Soviet Air Force's first reconnaissance aircraft to make use of ELINT equipment in addition to conventional cameras. When no mission equipment pod was carried, the MiG-21R could be used in the counter-air or strike role. In the latter case the aircraft carried two 16-round UB-16-57UM or 32-round UB-32 rocket pods with 57-mm (2.24-in) FFARs, or two 240-mm (9.44-in) S-24 heavy unguided rockets, or two bombs of up to 500 kg (1,102 lb) calibre.

As mentioned above, many air regiments had their obsolete MiG-21 variants replaced by newer models every seven to eight years. The aircraft that still had some service life left were passed on either to other regiments to handle different jobs or to training establishments. The Barnaul Military Pilot College in

Proudly wearing the 'Excellent aircraft' maintenance award badge, MiG-21SM '37 Red' taxies out for take-off with R-13M AAMs on the inner wing pylons.



A MiG-21SM with a PTB-800 drop tank – oddly enough, of the type usually carried by the MiG-23

A publicity photo of a MiG-21R fitted with a Type R ELINT pod and two drop tanks. The aircraft is in tan/green camouflage and wears the 'Excellent Aircraft' badge.

Siberia is a case in point. At first, it received many MiG-21PF, MiG-21PFS and MiG-21PFM interceptors, which were followed some time later by MiG-21R reconnaissance aircraft and MiG-21S fighters. Interestingly, when the Soviet fighter and fighter-bomber units introduced camouflage schemes (a lesson learned from the Six-Day War in 1967), even the flying colleges painted their aircraft in camouflage colours. Therefore, the previously silver-coloured *Fishbeds* and MiG-21U, MiG-21US and MiG-21UM *Mongol-A/B* trainers gained three-tone green or green/brown camouflage patterns. It is worth mentioning here that MiG-21s in combat units had two-digit tactical codes, while those operated by the flying colleges had three-digit codes.

Deliveries of production Su-7 *sans suffixe* tactical fighters began in early 1959. In keep-

'01 Red', a MiG-21SM from the unit pictured opposite, taxies out with UB-16-57UM rocket pods on the inboard wing pylons.

A MiG-21SM with a PTB-800 drop tank takes off. This time the tank is the *Fishbed*'s standard model with a pointed nose and cruciform fins.

A 'black man' installs the nozzle cover on a MiG-21 after the day's flying.

The crew chief checks the brake parachute of a MiG-21 before closing the doors of the parachute housing.

ing with established practice the first aircraft were delivered to the Tactical Aviation's 4th Combat Training & Aircrew Conversion Centre (4th TsBP i PLS – *Tsentr boye**voy** podgo**tov**ki i pere**oo**chivaniya **lyot**novo sos**tah**va*), which was then located in Voronezh. (Shortly afterwards, in 1960, the 4th TsBP i PLS moved to Lipetsk, where it resides to this day.)

Concurrently, the Soviet Air Force's first-line units also started re-equipping with the Su-7. The first to do so was the 523rd *Orshanskiy* IAP stationed at Vozdvizhenka AB near Ussuriysk in the Primor'ye Territory of the Soviet Far East. This unit, which was tasked with holding the service trials, was part of the 303rd IAD of the 1st Red Banner VA and had a long and distinguished combat history. It awarded the Order of the Red Banner of Combat, the Suvorov Order, Kutuzov Order and Aleksandr Nevskiy Order; the honorary appellation *Or**shan**skiy* was given for the unit's part in liberating the Belorussian city of Orsha in the Great Patriotic War. Between May and December 1951 the 523rd IAP had participated in the Korean War, flying MiG-15*bis* fighters. The choice of the unit was dictated by the base's proximity to Komsomol'sk-on-Amur where the Su-7 was manufactured, which ensured prompt support from the manufacturer during the introductory stage.

Service trials of the Su-7 with the 523rd IAP began on 6th October 1959 and were completed on 16th May 1960. Meanwhile, a second regiment – the 821st IAP of the 190th IAD based at Khvalynka AB near Spassk-Dal'niy (the name of the town translates as 'the distant town of Our Saviour') in the Primor'ye Territory – converted to the Su-7 *sans suffixe*. The 821st IAP, too, had fought in the Korean War (from January 1952 until the end of the hostilities), and one of its squadrons retained the old MiG-15*bis* fighters as the unit re-equipped.

However, the tactical fighter version of the *Fitter-A* had a brief career; it was soon superseded in production and in service by the Su-7B fighter-bomber, which achieved IOC with the Soviet Air Force in June 1960 and began gradually replacing the outdated MiG-15s and MiG-17s. The first unit to transition to the new hardware was the 642nd GvIBAP of the 48th VA (later renumbered as the 5th VA) in the Red Banner Odessa MD. The unit, whose history dated back to 1st November 1940, was based at Martynovka AB near Voznesensk in the Kirovograd Region of the Ukraine (Odessa MD). At the time it was equipped with MiG-15*bis* fighter-bombers.

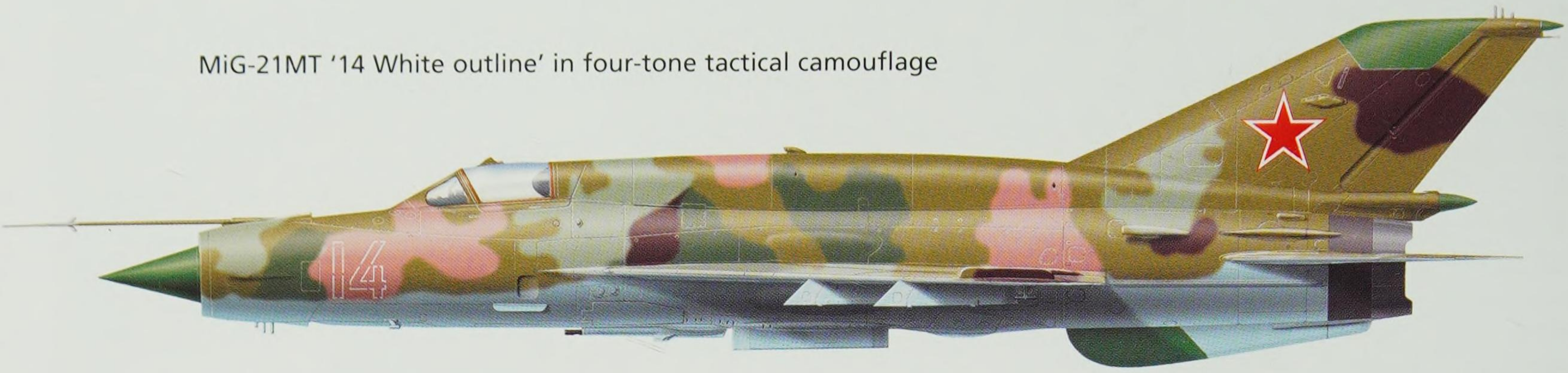
Service trials of the Su-7B in the 642nd GvIBAP began on 5th January 1961, continuing until October. However, less than a month after their commencement, on 24th January, the aircraft was officially included into the Air Force inventory. Other units followed in due course. In early 1961 the 274th IBAP based at Kubinka AB received its Su-7Bs. Later the unit moved to Migalovo AB near Kalinin (now renamed back to Tver'), a regional centre in north central Russia, and re-equipped with the Su-7BM having increased fuel capacity and other improvements.

Four other Su-7 units stationed in the Ukraine were part of the 17th VA, which later became the 14th VA and was controlled by the Carpathian MD. The 69th IBAP at Ovruch,

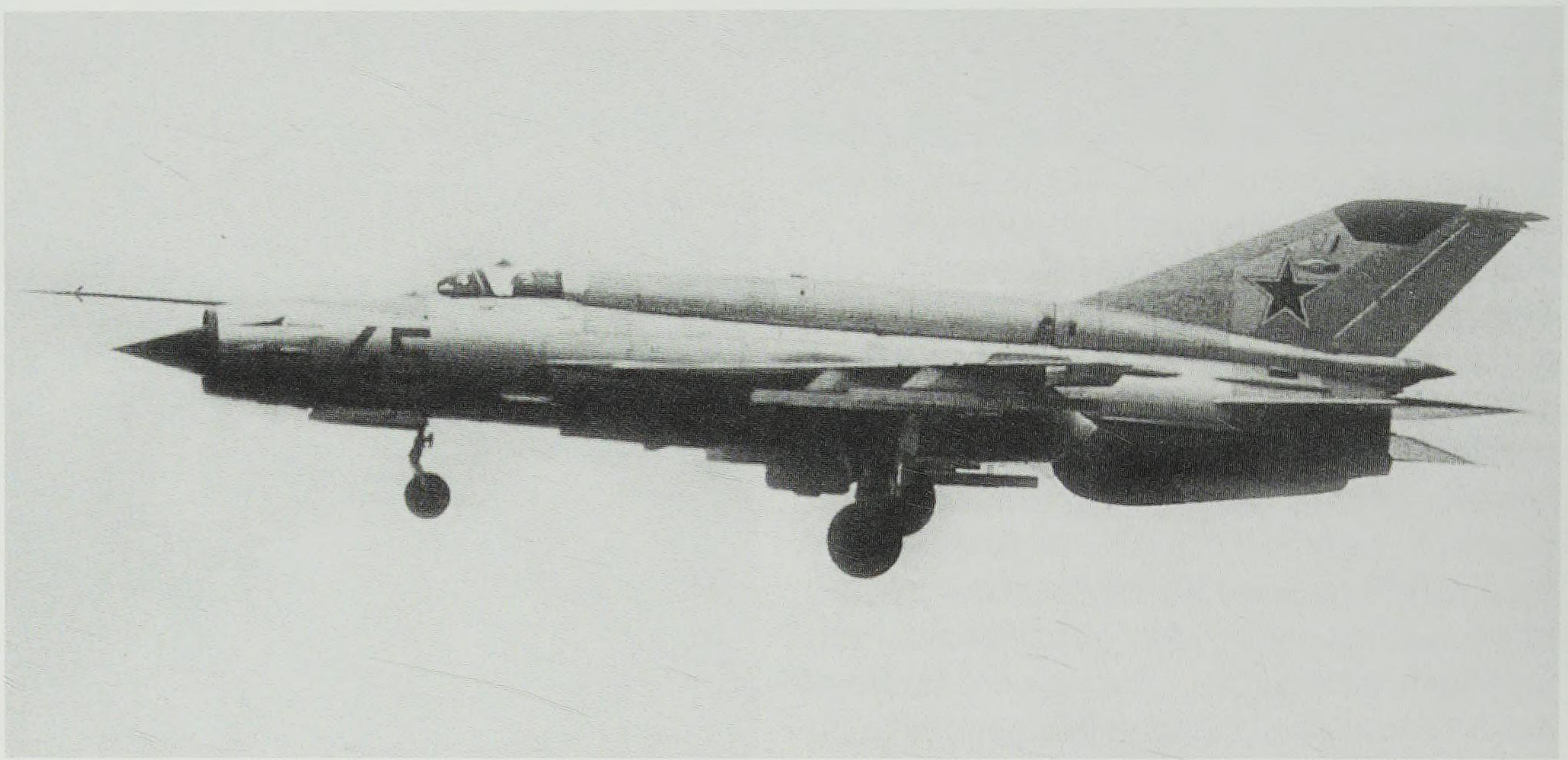
The crew chief of a MiG-21S reports mission readiness to the pilot before a sortie. Note the different shades of the skin on various parts of the airframe.

A MiG-21SM streams its brake parachute on landing. Interestingly, different types of missile rails are fitted to the inner and outer pylons.

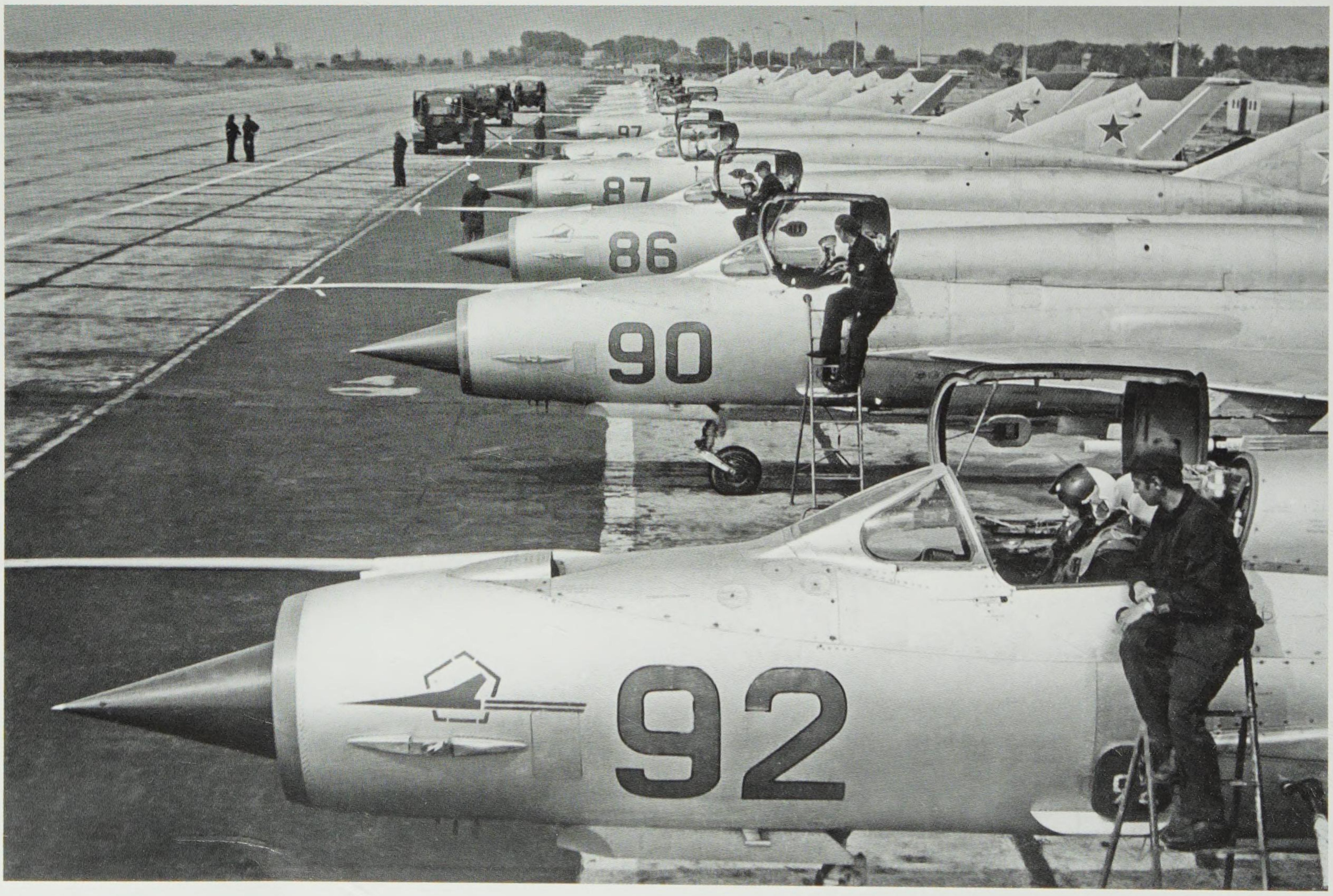
MiG-21MT '14 White outline' in four-tone tactical camouflage

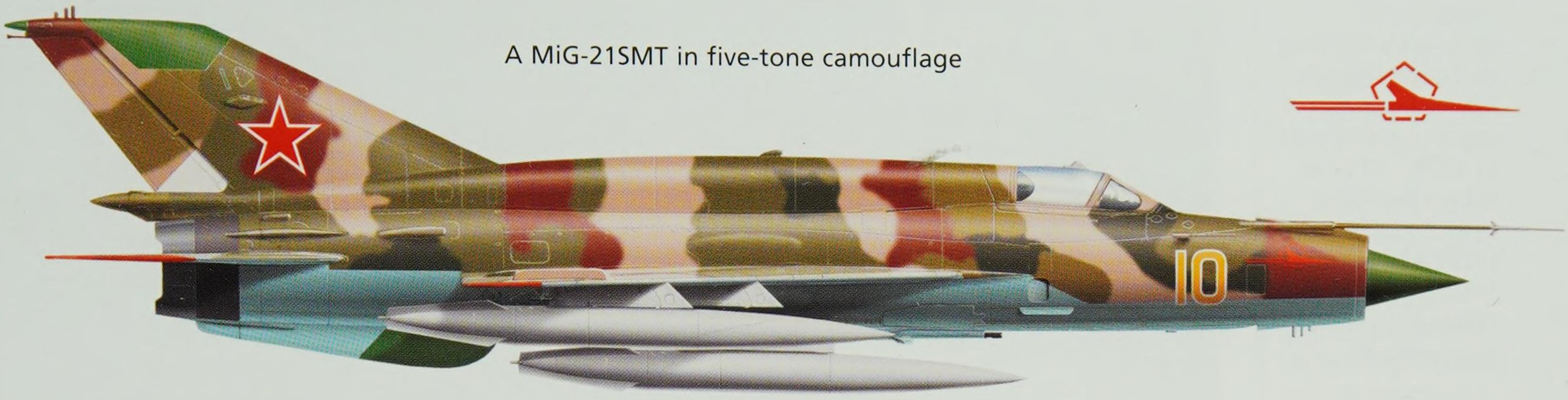


A MiG-21SMT in silver overall factory finish is seen on landing approach.

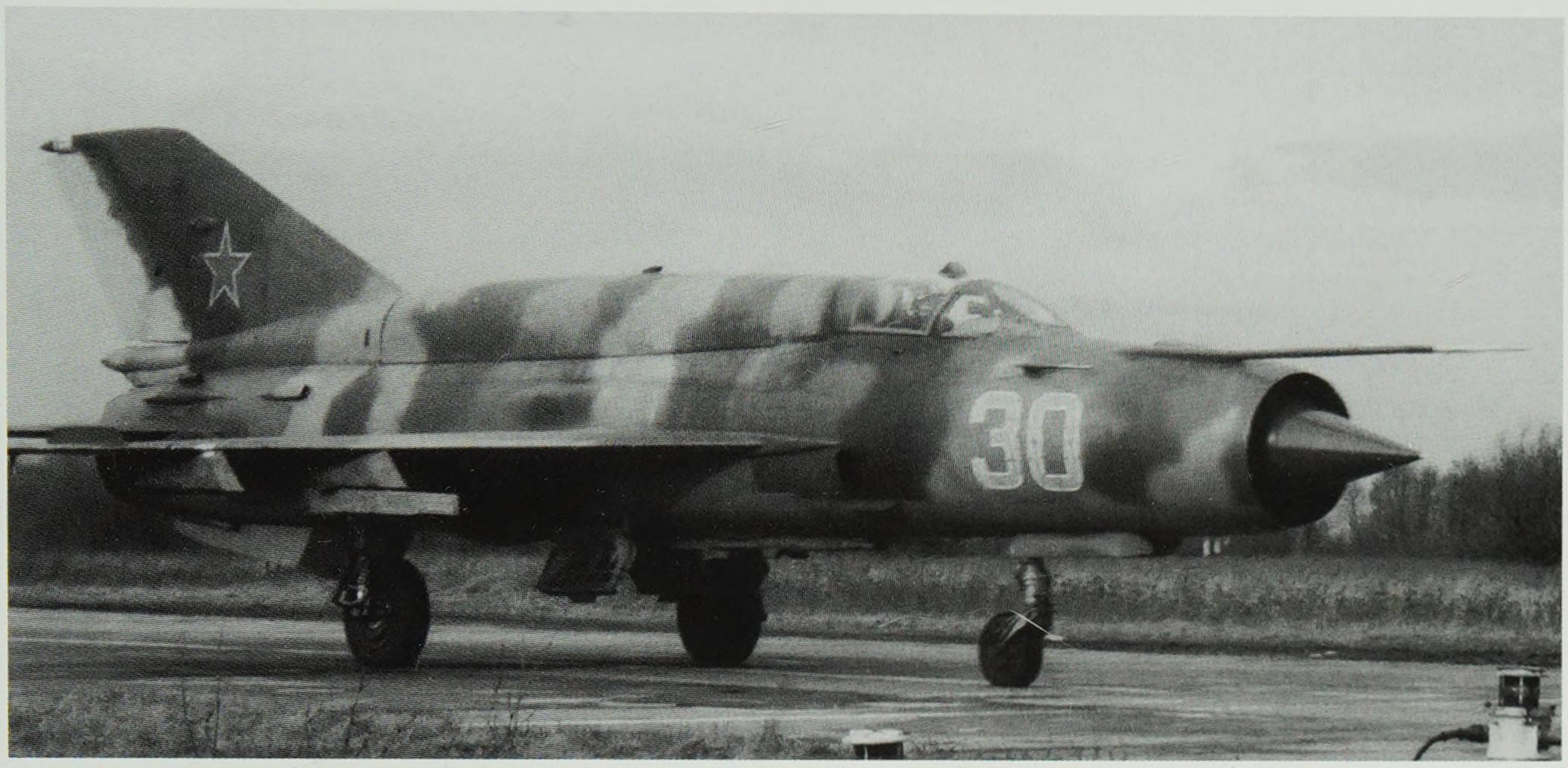


Silver-painted MiG-21SMTs on the flight line as the whole regiment prepares to take off. Most aircraft sport the maintenance award badge.





A MiG-21SMT in five-tone camouflage

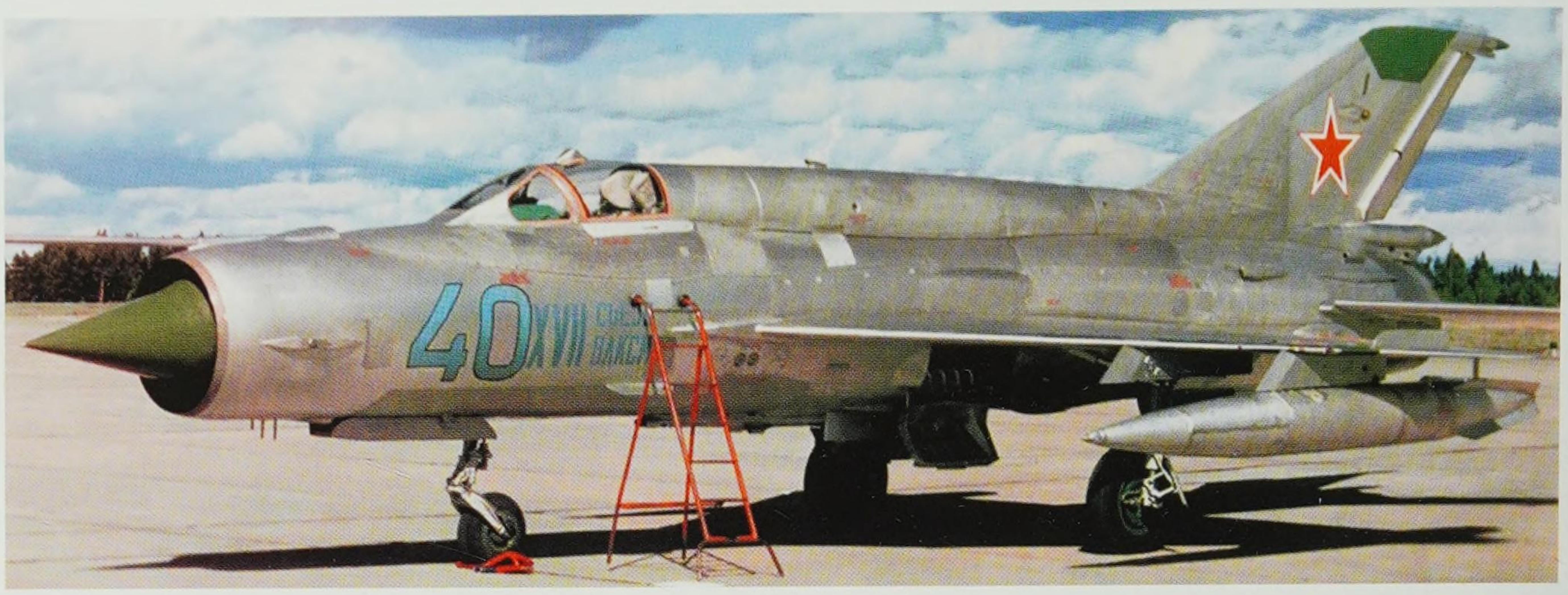


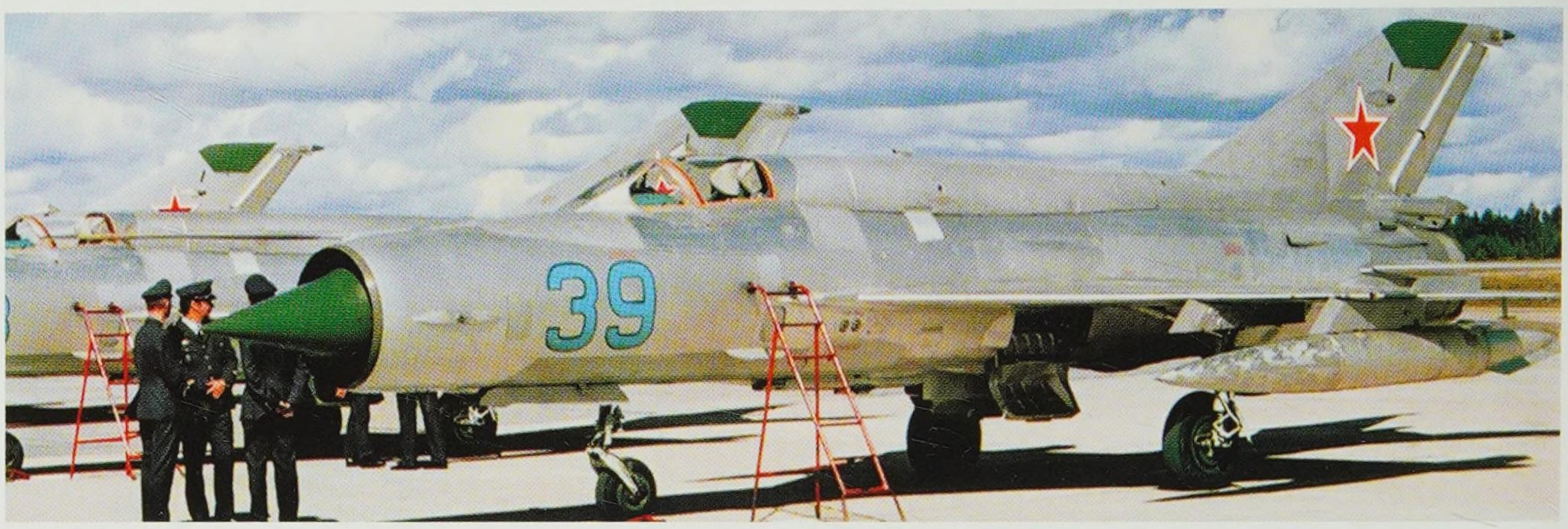
A camouflaged MiG-21SMT shows off the *Fishbed-K*'s distinctive hump-backed profile. Oddly, missile rails are attached to the inboard pylons only.

This MiG-21SMT wears a two-tone camouflage scheme.

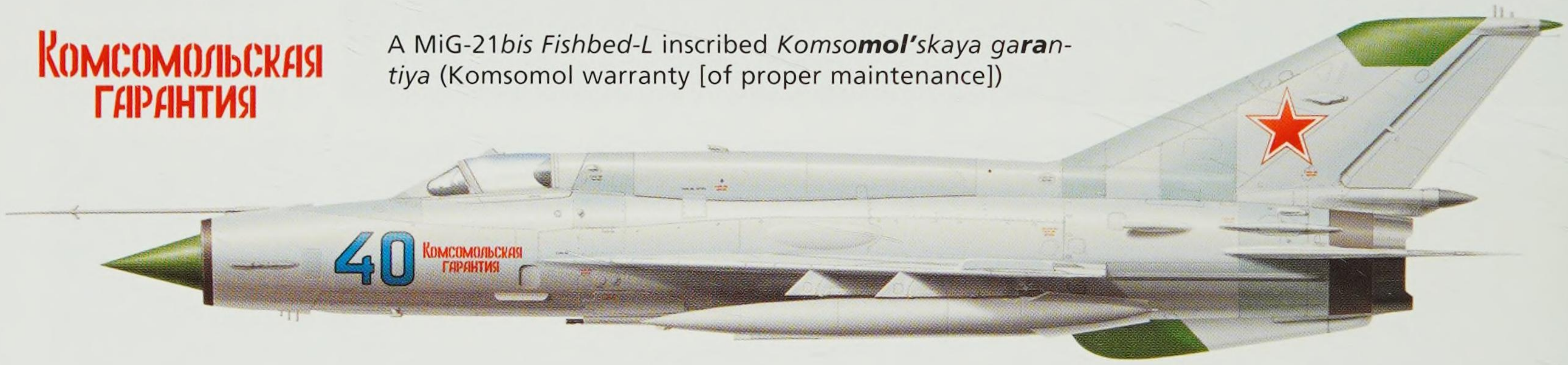
Zhitomir Region, converted to the Su-7B from the MiG-17 (modified for the fighter-bomber role). The 806th IBAP based at Lutsk (the administrative centre of the Volyn' Region) and awarded two Red Banner Orders and the Suvorov Order became one of the first Su-7BM operators in 1962. The 314th APIB (*avia**polk** istre**bit**eley-bombardi**rov**shchikov* – fighter-bomber regiment) was commissioned at Cherlyany, L'vov Region, as a Su-7B operator in the mid-1970s, whereas the 947th *Sevas**top**ol'skiy* IBAP (so named for its part in liberating the heroic seaport of Sevastopol' in the Crimea) was based at Doobno, Rovno Region, and was likewise previously a MiG-17 operator. (Note: In 1976 the Soviet fighter-bomber regiments and divisions, previously abbreviated as IBAP and IBAD (*istre**bit**el'no-bombardi**rov**ochnaya **a**viadi**vee**ziya*), were restyled as APIB and ADIB (***a**viadi**vee**ziya istre**bit**eley-bombardi**rov**shchikov*) respectively. The reason was probably that the original acronyms sounded almost obscene but, strangely enough, no one had thought of it before.)

In the Far Eastern MD, the aforementioned 523rd IAP, which became the 523rd IBAP, received its Su-7Bs in late 1961. Four years later it exchanged them (and the surviving Su-7s *sans suffixe*) for the then-latest Su-7BKL featuring new wheel-skid main gear units (hence the KL for *ko**lyos**no-**lyzh**noye* [*shas-**see***]) meant to give soft-field capability. This

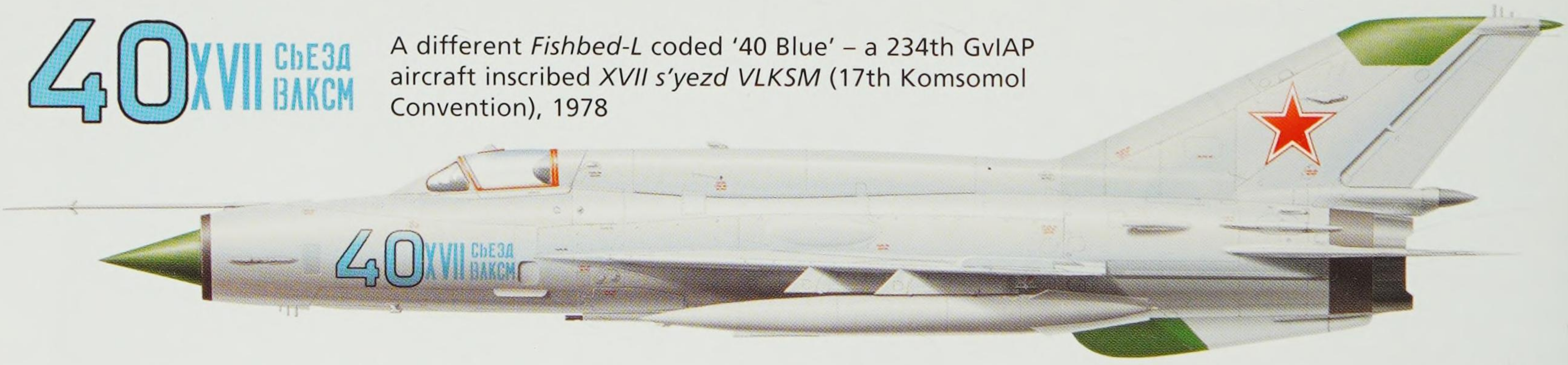




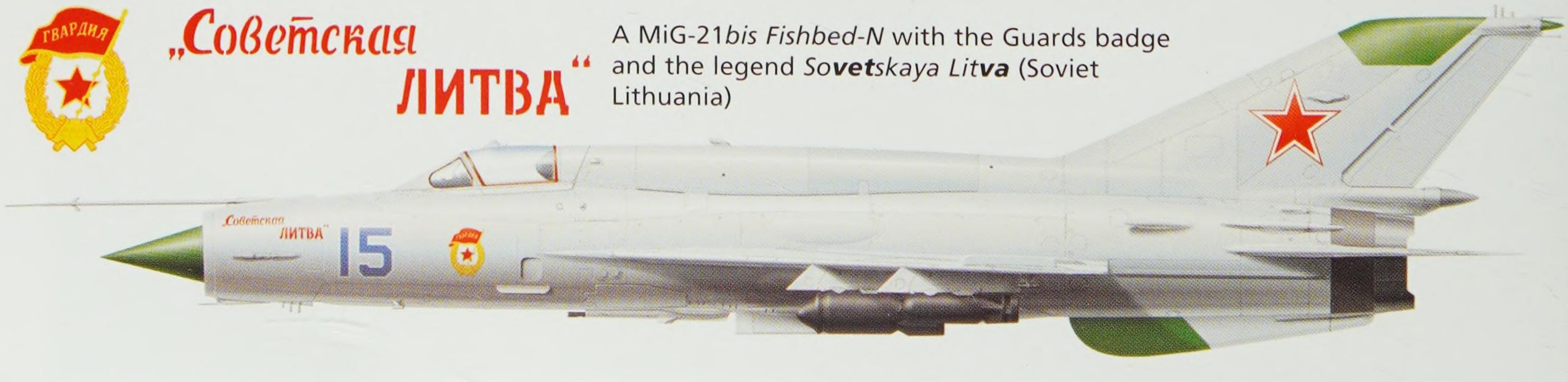
234th GvIAP MiG-21*bis* fighters to Kuopio-Rissala AB, Finland, during a courtesy visit in 1978. '40 Blue' is inscribed *XVII s'yezd VLKSM* (17th All-Union Young Communist League Convention).


Комсомольская
гарантия
40 Комсомольская гарантия

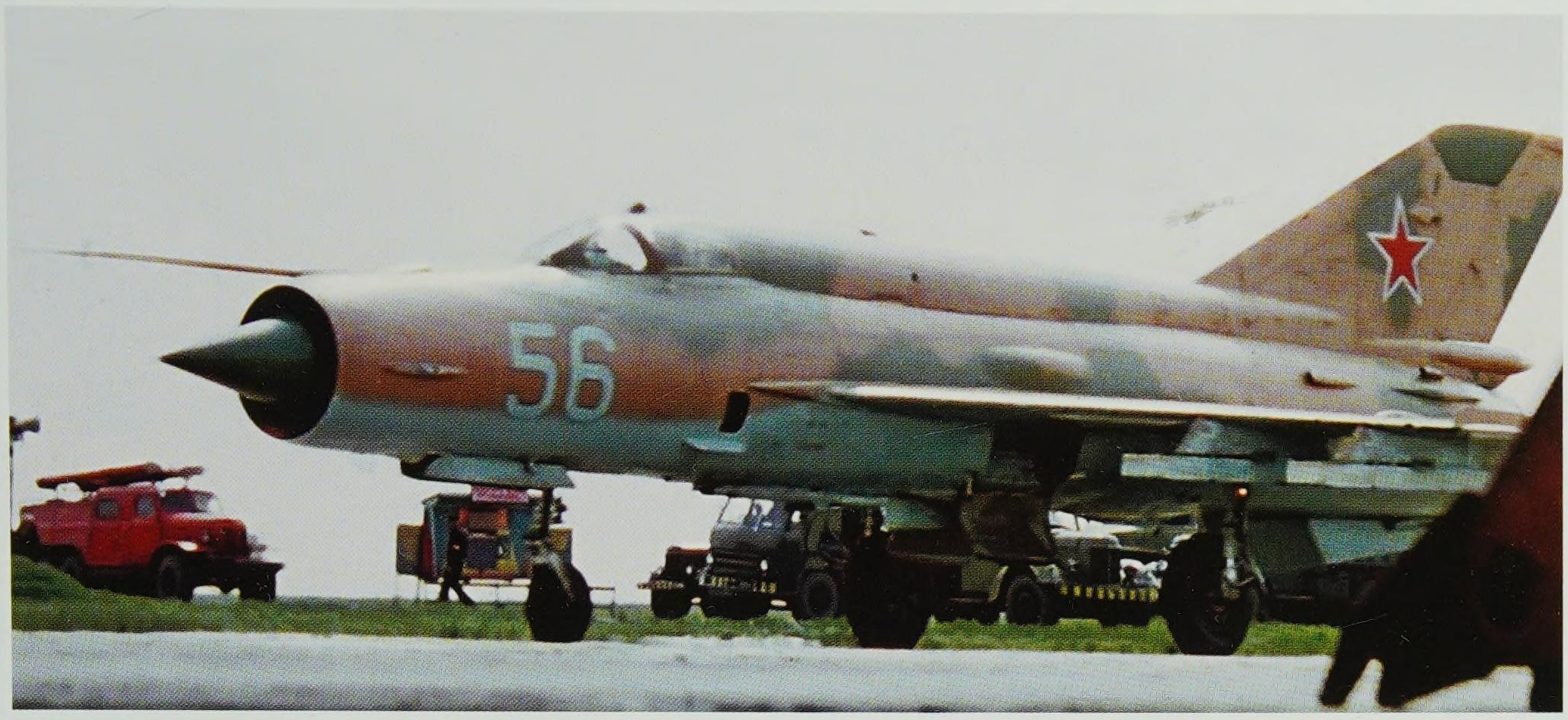
A MiG-21*bis Fishbed-L* inscribed *Komso***mol'***skaya ga***ra***ntiya* (Komsomol warranty [of proper maintenance])


40 XVII СЬЕЗД ВЛКСМ
40 XVII СЬЕЗД ВЛКСМ

A different *Fishbed-L* coded '40 Blue' – a 234th GvIAP aircraft inscribed *XVII s'yezd VLKSM* (17th Komsomol Convention), 1978


ГВАРДИЯ
„Советская
ЛИТВА"
Советская ЛИТВА
15

A MiG-21*bis Fishbed-N* with the Guards badge and the legend *So***vet***skaya Lit***va** (Soviet Lithuania)

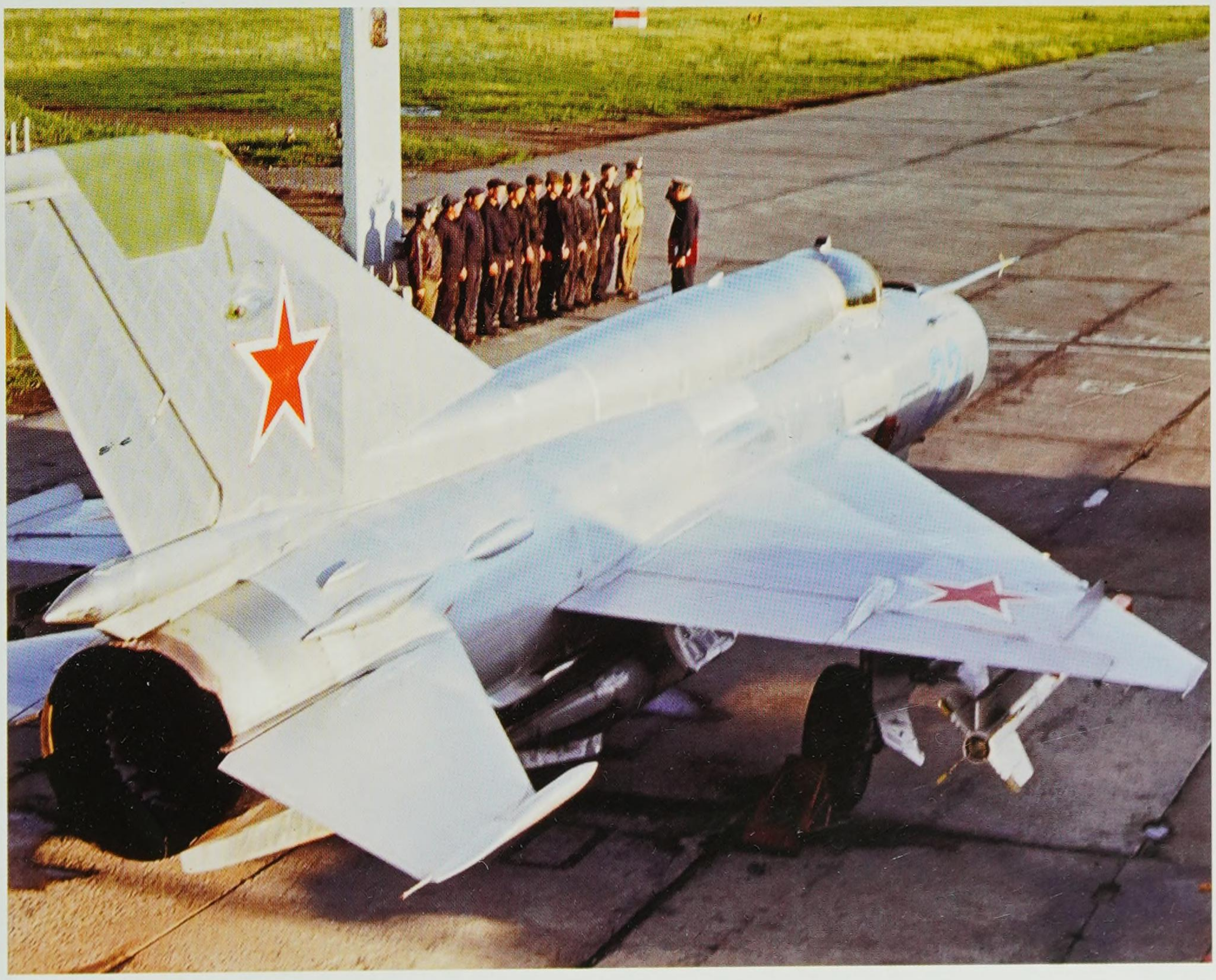


A MiG-21*bis* in two-tone tactical camouflage taxies past ground support vehicles – mostly real dinosaurs, such as the PMZ-56A fire engine.

version achieved IOC with the 523rd IBAP, served on until 1971 when they were, in turn, superseded by Su-17s *sans suffixe*.

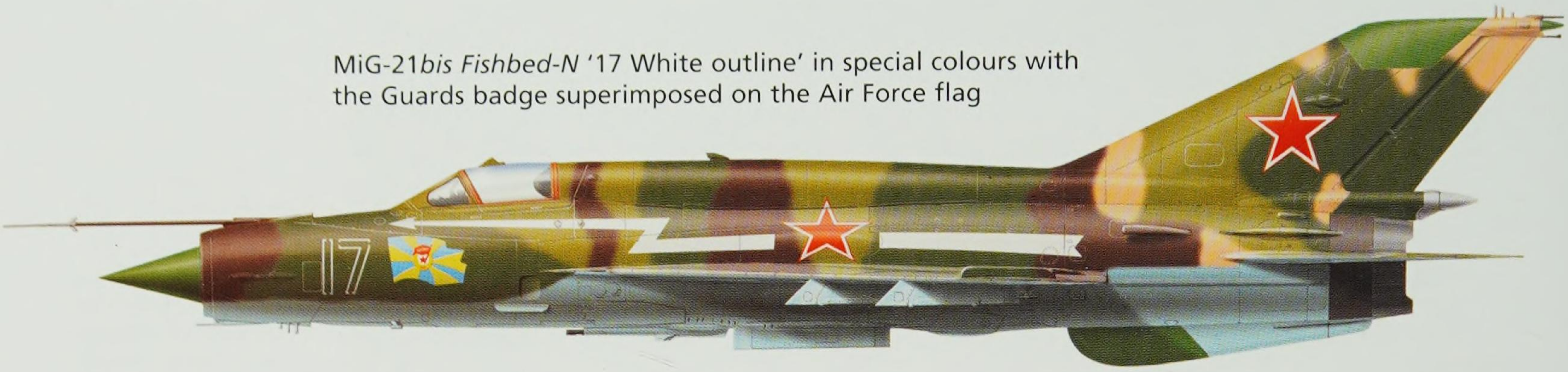
Apart from this unit, in the 1st VA the *Fitter-A* was operated by the 229th APIB, which was commissioned in 1982 at the freshly completed Birofeld AB near Birobidzhan, the administrative centre of the Jewish Autonomous Region. The unit took over the Su-7BMs of the 306th OAPIB (*ot**del'**nyy* *avia**polk** istre**bit**eley-bombardi**rov**shchikov* – independent fighter-bomber regiment) based at Bobrovichi AB, Belorussia; the aircraft were ferried with 10-11 refuelling stops, as the two bases were more than 7,000 km (4,350 miles) apart. It took two months to ferry the 40 aircraft, which were accompanied by two Antonov An-12 *Cub* transports carrying spares, ground support equipment and ground crews. In 1985 the unit retired its Su-7BMs, re-equipping with Su-17M2s – likewise second-hand aircraft; however, the Su-7U trainers served on until the 229th APIB disbanded in 1989.

At the beginning of 1966 the 274th IBAP at Migalovo AB re-equipped with Su-7BKLs,

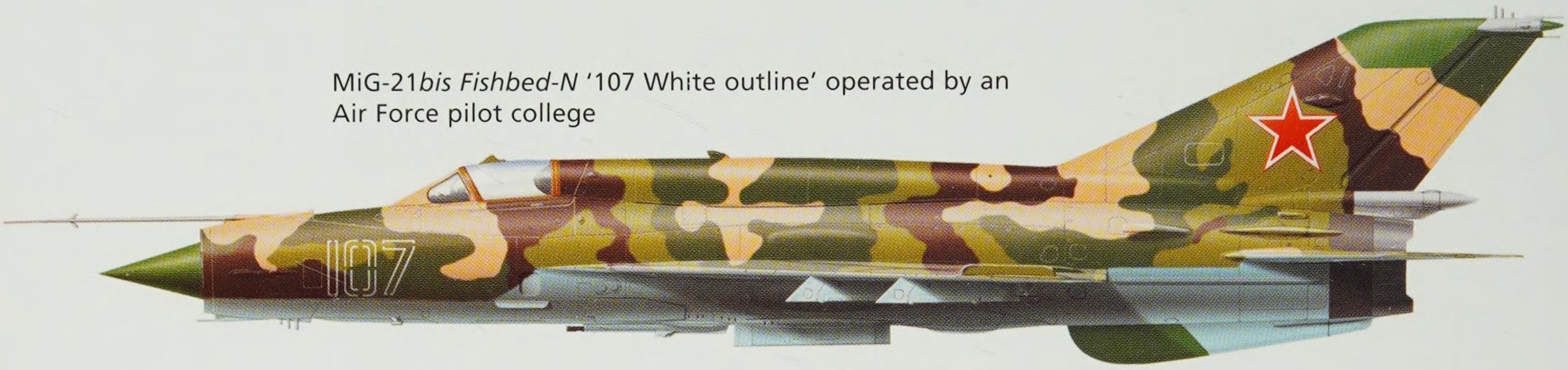


Ground personnel receive instructions for the day's work beside a MiG-21*bis*.

MiG-21*bis Fishbed-N* '17 White outline' in special colours with the Guards badge superimposed on the Air Force flag



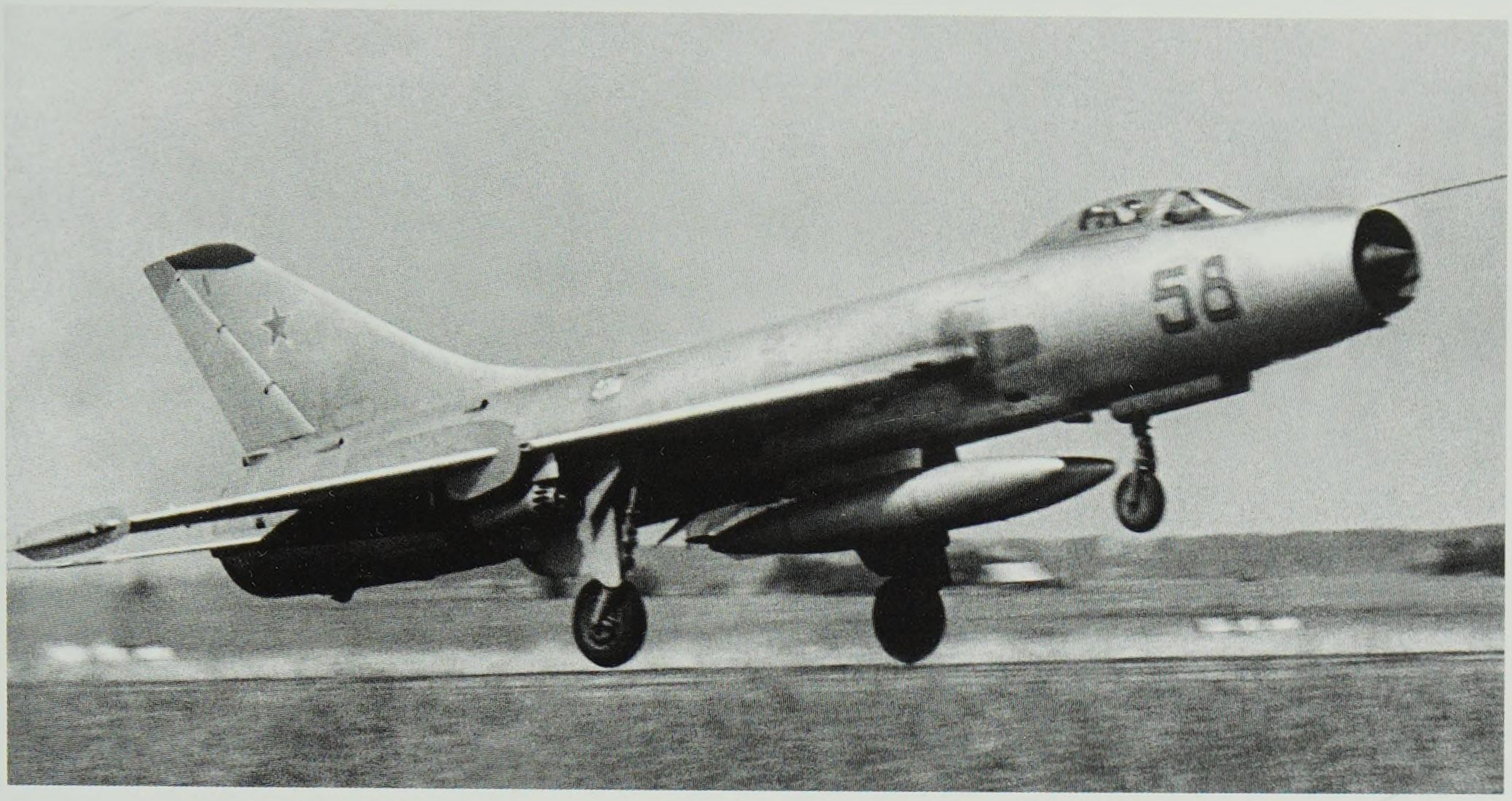
MiG-21*bis Fishbed-N* '107 White outline' operated by an Air Force pilot college



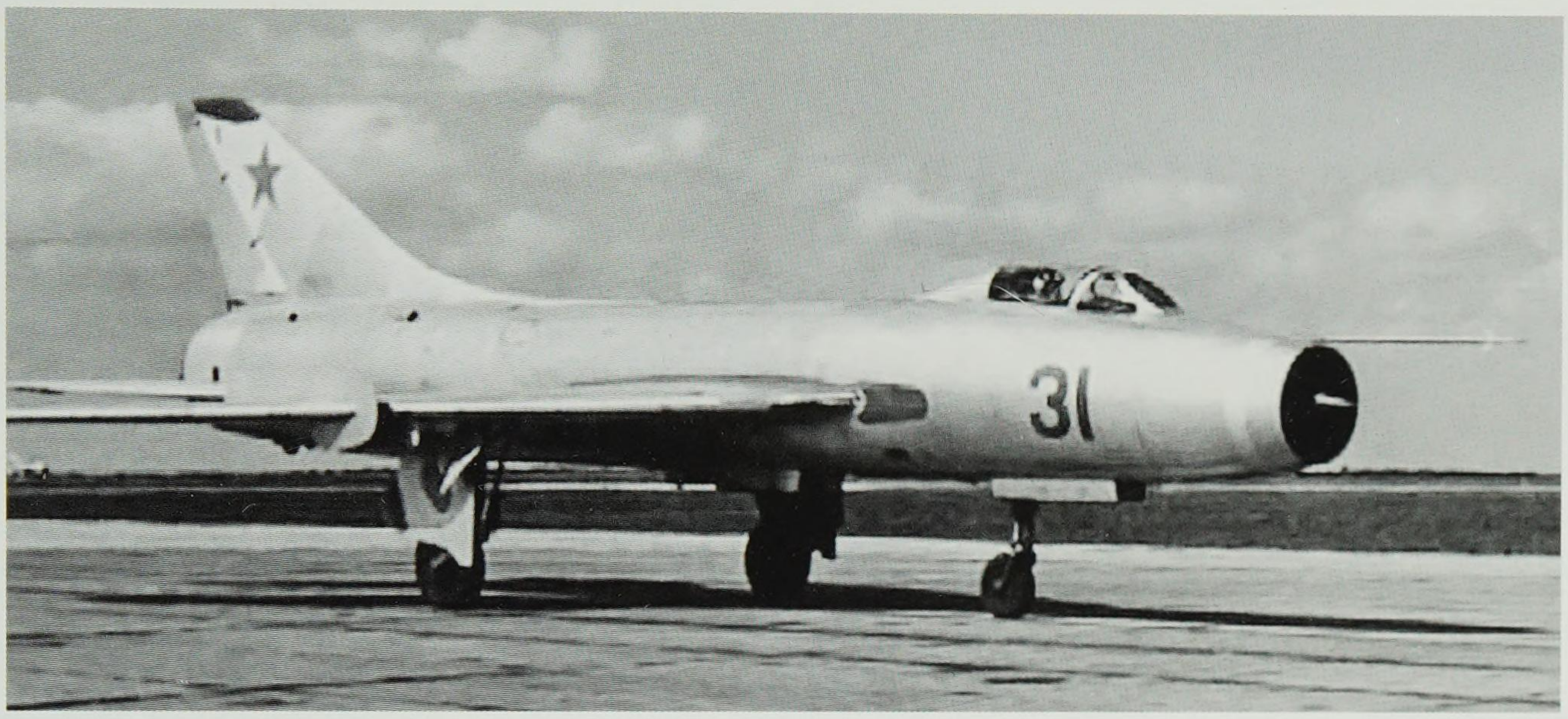
followed by other fighter-bomber regiments. In the Baltic MD, the 321st OAPIB at Suurküül (Hämari) AB in Estonia was established within the 15th VA; it inherited the Su-7BKLs of the 274th APIB when the latter converted to the 'swing-wing' Su-17M3. The 321st stuck with the *Fitter-A* until 1983 when it, too, converted to a 'swing-wing' type – the Su-24 *Fencer* tactical bomber.

In the 23rd VA (Transbaikalian MD), the Su-7B saw service with two units – the 6th ***Krak**ovsko-Ber**lin**skiy* APIB awarded the Suvorov and Kutuzov Orders, which was based at Step' AB, and the 189th *Brestskiy* GvAPIB awarded the Suvorov Order, which was stationed at Borzya (Chindant AB) right next to the Chinese border. The former unit had received its honorary appellations for liberating Kraków and taking Berlin, while the 189th GvAPIB had taken part in liberating the heroic fortress of Brest, Belorussia, which had taken the first onslaught of the German invasion in June 1941. The latter unit had previously operated MiG-15*bis* fighter-bombers.

Pilots pose with MiG-21*bis* '51 White outline' in a winter setting.



Su-7B '58 Red' has just become airborne. Note the no-load position of the mainwheels and the soot deposits on the fuselage caused by firing the cannons.

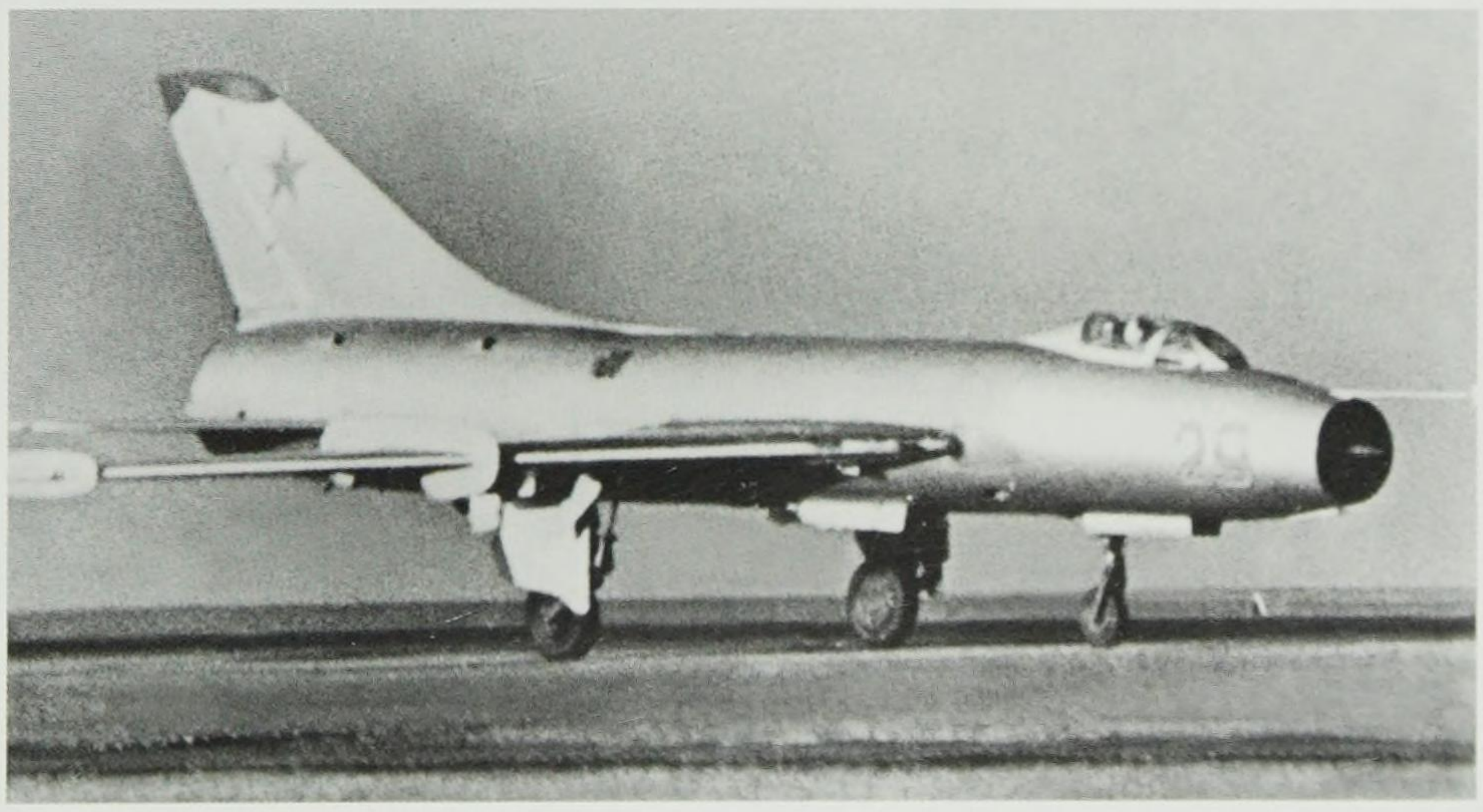


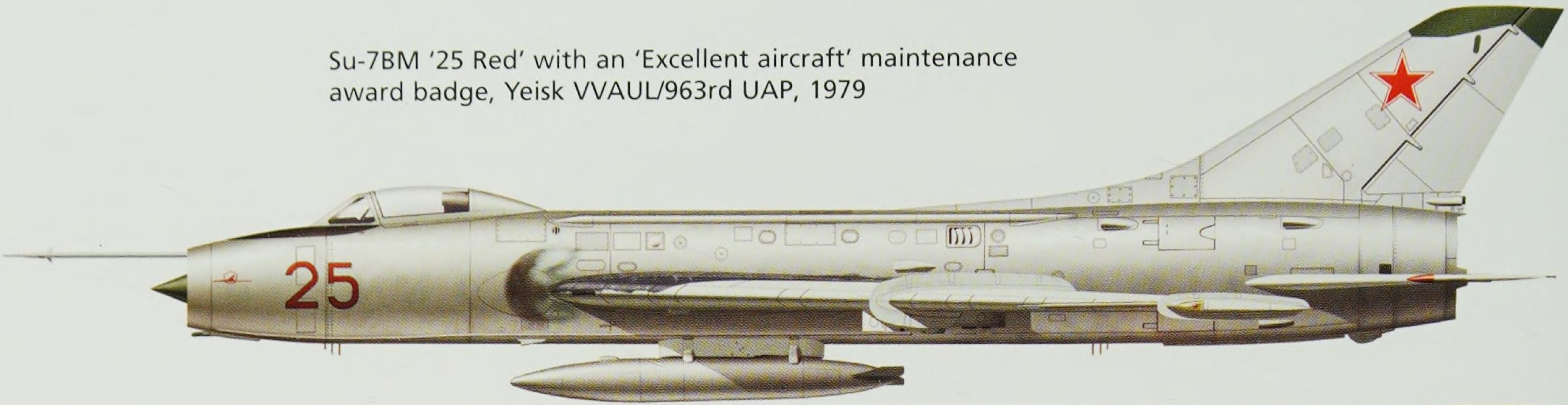
Su-7B '31 Blue' carries a larger star on the fin; the size of the national insignia varied in different batches. At first the type was operated in a natural metal finish with a light grey anti-glare panel.

In the Belorussian MD, the 26th VA included four *Fitter-A* regiments for a while. Bobrovichi AB hosted two such units, which were known as 'the old one' and 'the new one' in local slang. The former of these was the 953rd ***Vit**ebskiy* IBAP named after the Belorussian Komsomol and awarded the Suvorov and Kutuzov Orders; the honorary appellation had been given for liberating the Belorussian city of Vitebsk. It reported to the 1st *Stalingradskaya* GvIBAD awarded two Red Banner Orders, the Suvorov and Kutuzov Orders. Interestingly, two of the unit's squadrons were equipped with Su-7BKLs while the third operated Su-7BMK export fighter-bombers – apparently diverted from an export order. The Su-7BMKs were used for a considerable time, evoking some choice words from their technicians with regard to the aircraft's maintenance stencils and labels which were in English. In 1978-79 the regiment became a tactical bomber unit (the 953rd BAP), converting to Su-24s and ceding its *Fitters* to the 305th OAPIB.

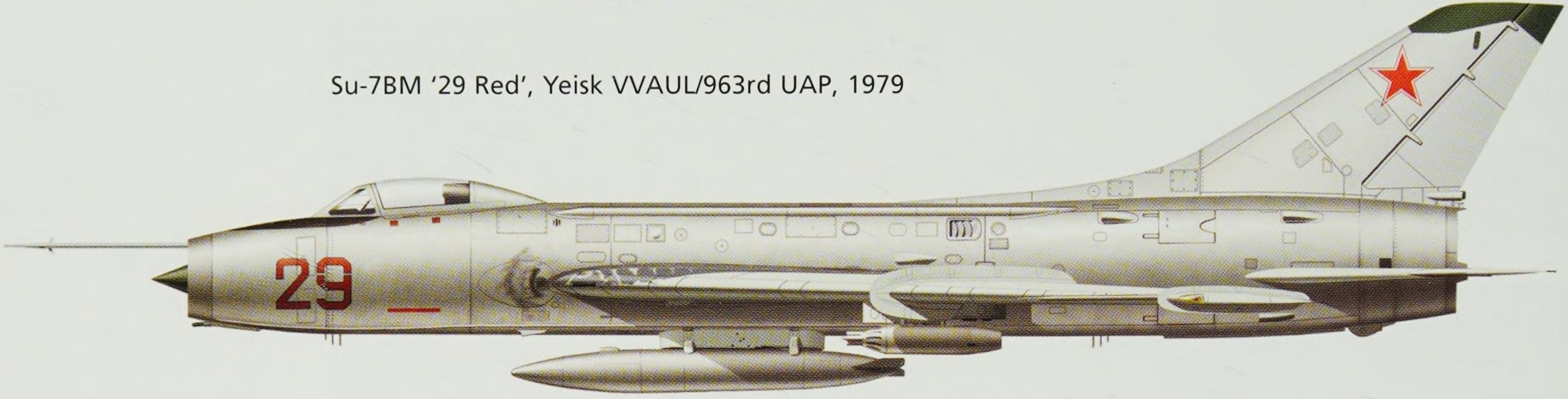
The 'new' regiment was a direct reporting unit, the aforementioned 306th OAPIB established in 1976. Initially it operated a mix of MiG-17s (two squadrons) and Su-7BMs (one squadron) before converting wholly to the *Fitter-A* in 1977. This unit, too, converted to

An in-service shot of an early Su-7B coded '29 Red'; note the nose-down ground angle.





Su-7BM '25 Red' with an 'Excellent aircraft' maintenance award badge, Yeisk VVAUL/963rd UAP, 1979



Su-7BM '29 Red', Yeisk VVAUL/963rd UAP, 1979

the Su-24 in 1982, transferring its Su-7BMs to the 229th APIB.

Postavy AB in the Vitebsk Region likewise hosted two units. The first was the 940th APIB of the 1st GvADIB, which converted from the MiG-17 in 1978. Again, the regiment operated a mix of domestic and export versions, with Su-7BKLs in Sqns 1 and 2 and Su-7BMKs in Sqn 3. The unit transitioned to the Mikoyan MiG-27 in the early 1980s. The other regiment was the 305th OAPIB, which was commissioned in 1976 with elderly MiG-17s but exchanged them for *Fitter-As* shortly afterwards. This unit had the distinction of being the last Soviet operator of the Su-7, converting to Su-24s as late as 1986.

In the Leningrad MD (76th VA), the Su-7BM saw service with the 722nd OAPIB at Smoorav'yovo AB near Gdov, a district centre in the Pskov Region. In 1975 the unit converted to the MiG-27 *Flogger-D* fighter-bomber, which was then the latest state of the art.

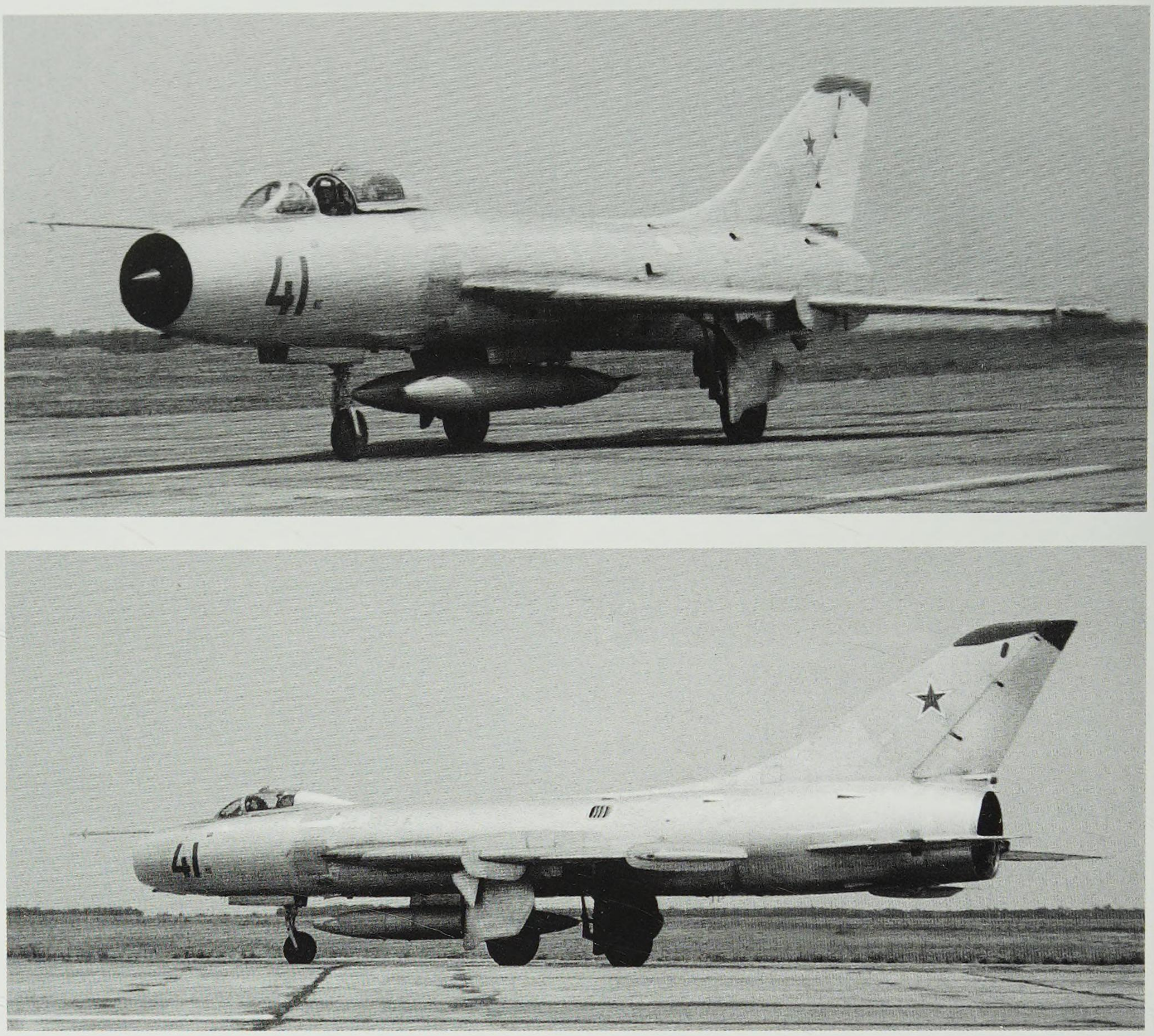
Five Su-7Bs, each carrying two PTB-600 drop tanks, line up for a formation take-off.

In the Transcaucasian MD the 34th VA included a single Su-7 regiment – the 168th Red Banner GvAPIB awarded the Aleksandr Nevskiy Order, which was based at Bol'shiye Shiraki AB (aka Marneuli AB) in Georgia. The unit operated the Su-7BM and Su-7BKL until 1978 when it converted to the Su-17M2 *Fitter-D*.

Meanwhile, the tactical bomber regiments began phasing out the obsolete subsonic IL-28 and re-equipping with another 'twenty eight' – the supersonic Yak-28 and Yak-28B *Brewer-A*. The 4th VA's 132nd BAD (Baltic MD) comprising the 4th GvBAP and 63rd BAP at Chernyakhovsk (Kaliningrad Region) and the 668th BAP at Tukums (Latvia) was the first to re-equip. Bomber versions of the Yak-28 were also operated by the 24th VA's 56th BAD/230th BAP at Cherlyany (Carpathian MD), the 34th VA's 36th BAD/143rd BAP at Kopitnari in Georgia (North Caucasian MD), the 149th GvBAP at Nikolayevka AB near Alma-Ata (Kazakhstan, Central Asian MD), the 1st VA/277th *Mlavskiy* BAP at Khoorba AB

As this photo shows, the Su-7Bs depicted opposite were part of a larger section.

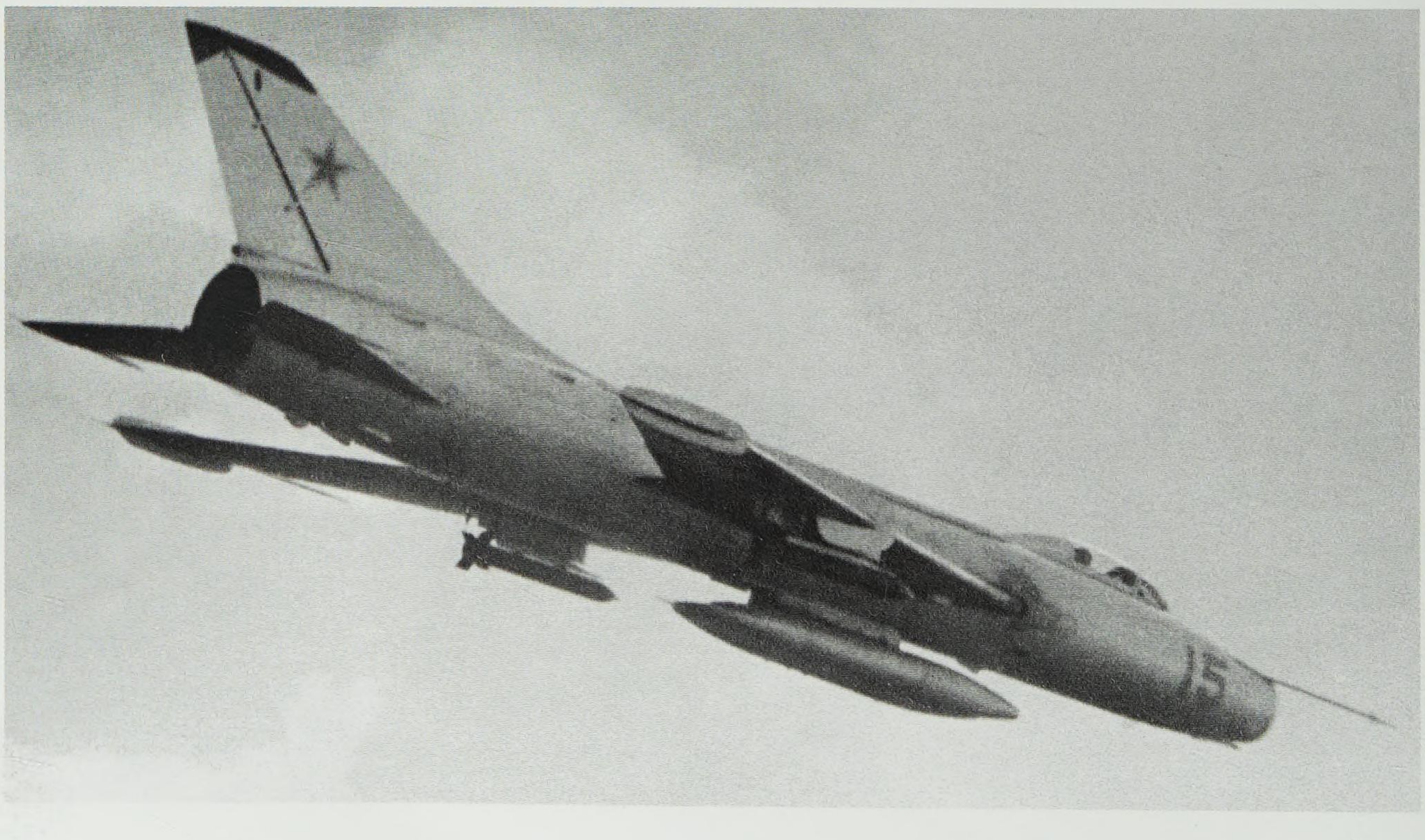
A closer look at Su-7Bs '29 Red' and '32 Red' shown opposite.



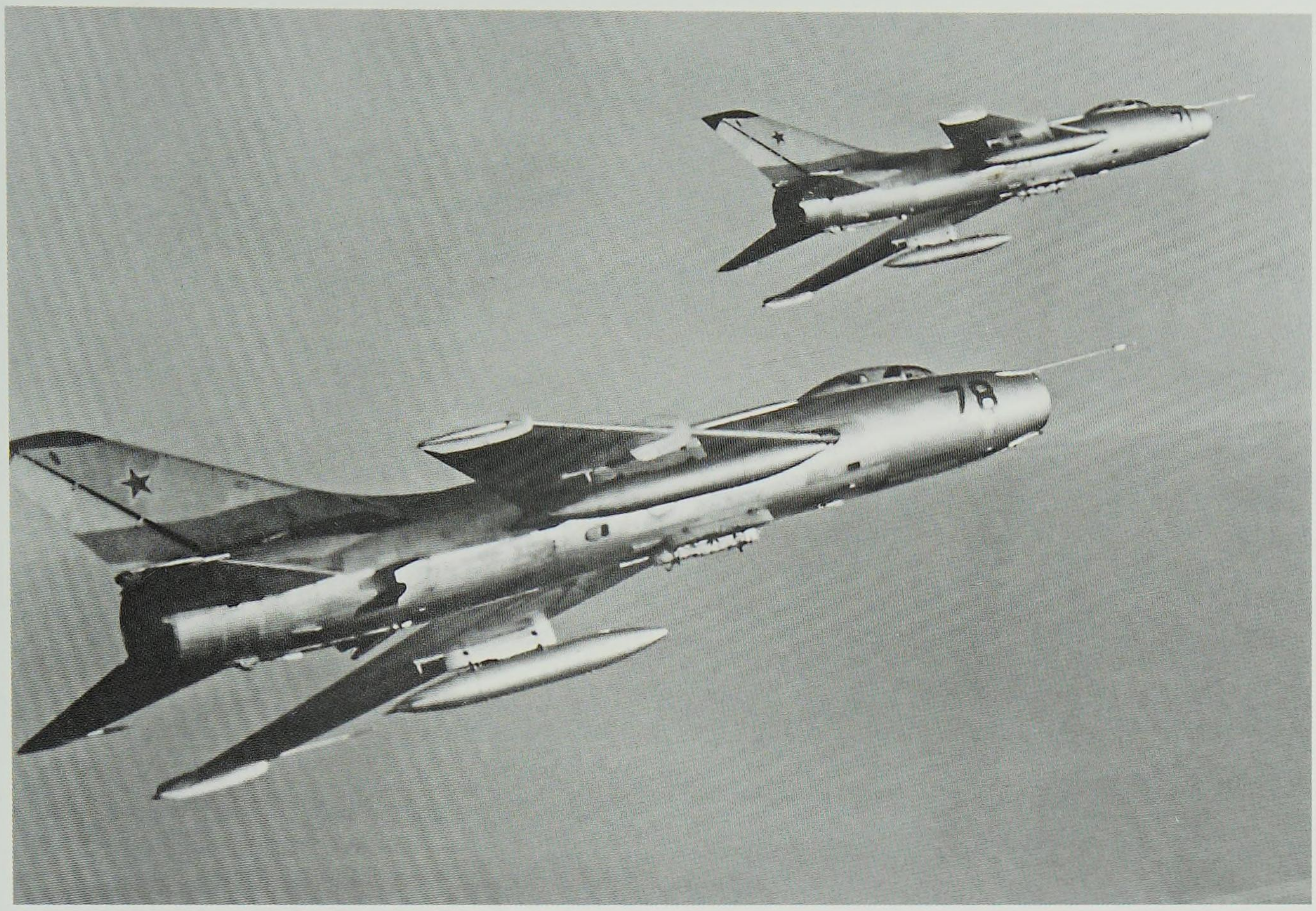
The pilot of Su-7B '41 Red' closes the canopy as he taxies past the camera. Note the enlarged gun blast plates (a late addition) and the small size of the star insignia on the tail.

near Komsomol'sk-on-Amur (Far Eastern MD) and other units.

As the Yak-28U *Maestro* conversion trainer, Yak-28R *Brewer-D* reconnaissance version and Yak-28PP *Brewer-E* ECM aircraft entered production, the Soviet Air Force's independent reconnaissance and ECM regiments also re-equipped with the supersonic twinjet. This was a lengthy process which dragged on until the early 1970s. For example, the 48th GvORAP (*Gvar**dey**skiy ot**del'**nyy raz**ved**yvatel'nyy **a**via**polk*** – Guards Independent



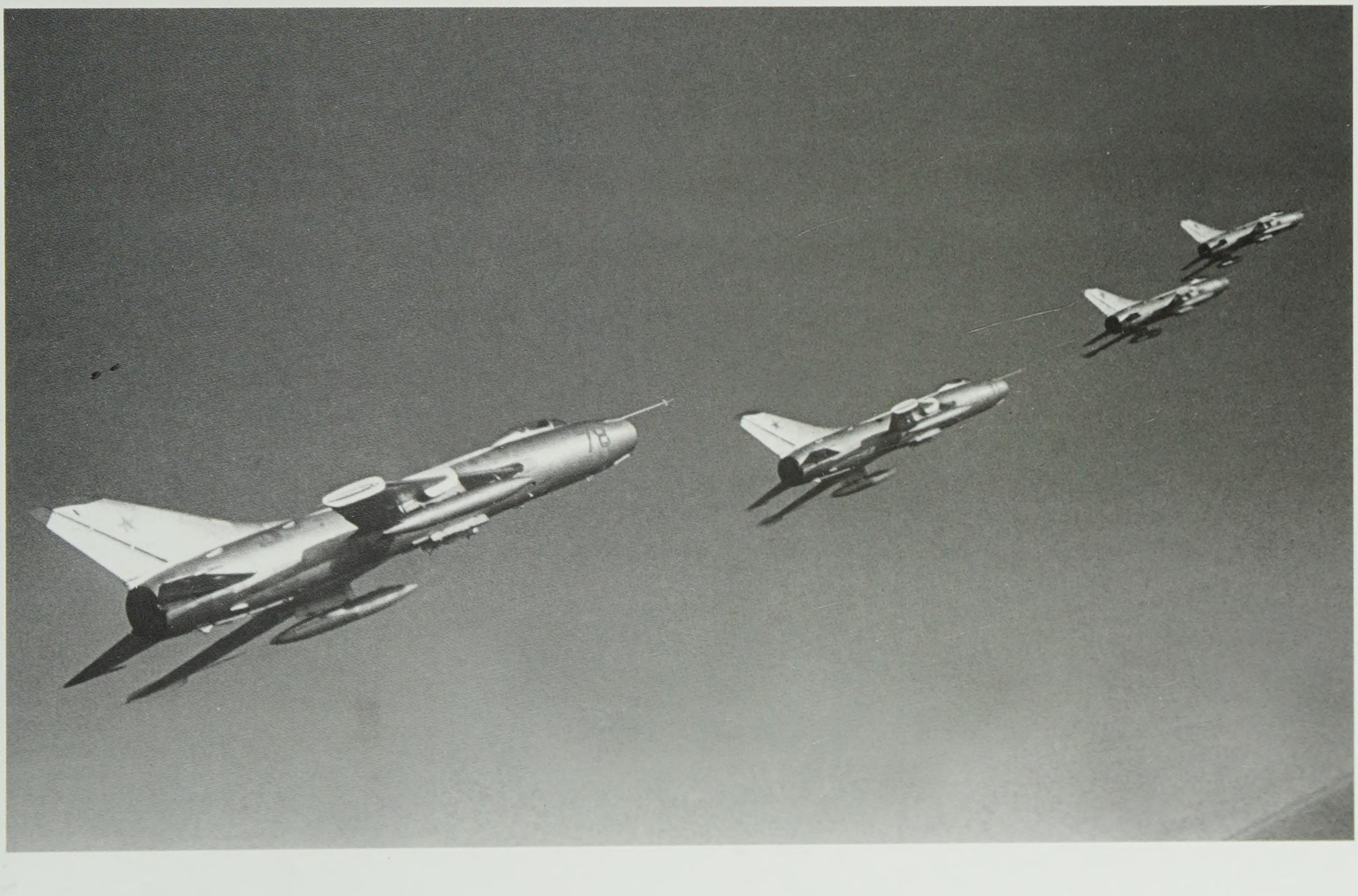
This Su-7BM coded '15 Red' is carrying two drop tanks and two S-24 rockets on the wing pylons.



Two Su-7BMs in echelon starboard formation. The wingman is using his airbrakes to keep formation.

Reconnaissance Air Regiment) at Kolomyya (Ivano-Frankovsk Region, the Ukraine) received its first two Yak-28U trainers in the second half of 1962. However, it was not until eleven years later that the unit completely re-equipped with the Yak-28R, having flown the Yak-27R *Mangrove* until then. Most of the reconnaissance units operated the *Mangrove* and the *Brewer-D* in parallel for several years; sometimes the Yak-28R even served alongside the elderly IL-28R! This 'old plus new' trend was repeated several years later when the units

A flight of Su-7BMs; the pair shown above ('71 Red' and '78 Red') is bringing up the rear.



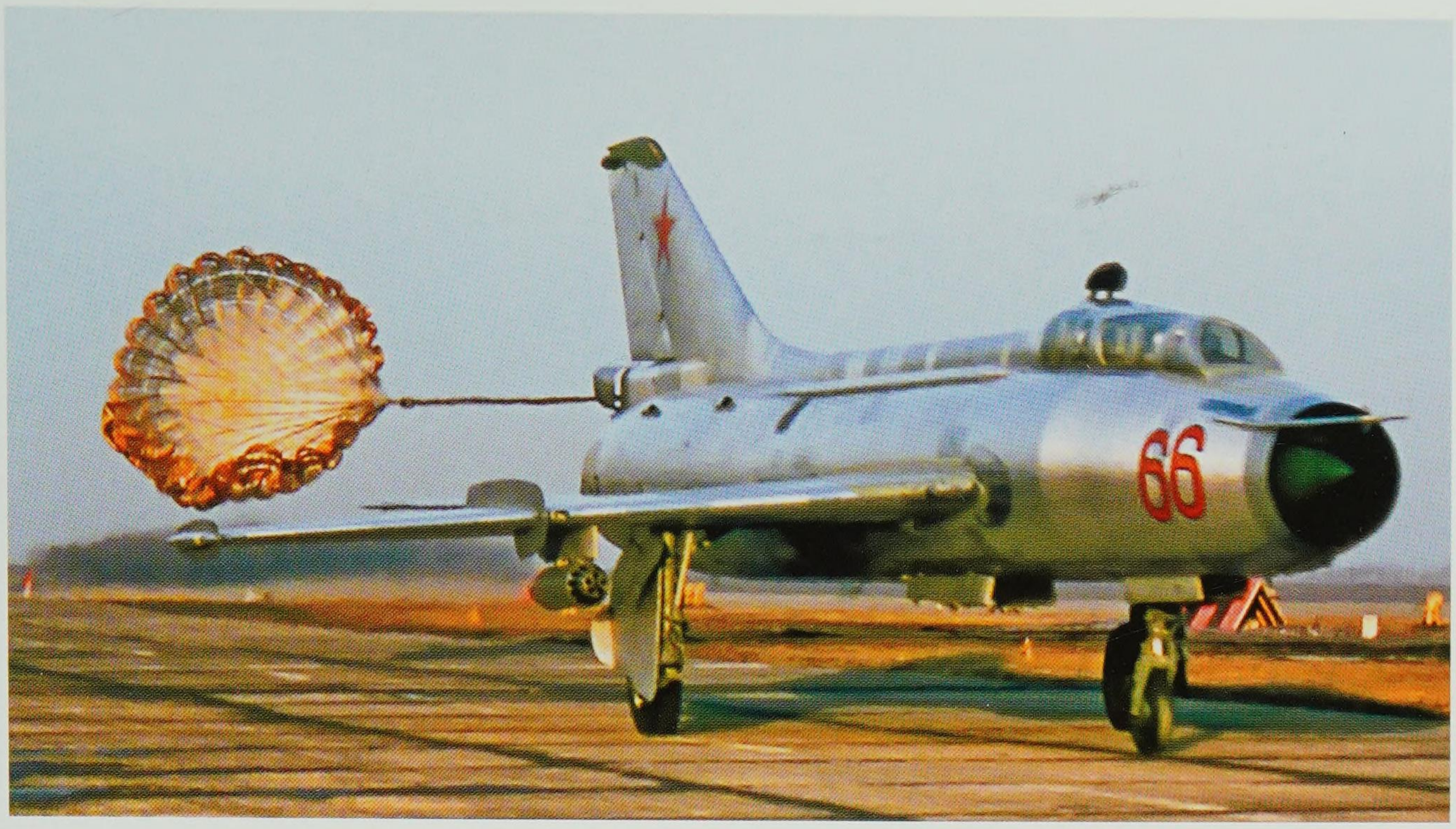
This Su-7BKL (note the brake parachute housing at the base of the rudder) carries the drop tanks on the ing pylons. The tactical code is either orange or red but faded.

began re-equipping with the new MiG-25R and other reconnaissance versions of the *Foxbat* in due course. This was probably a 'belt and braces' policy to make sure the unit would still be fully operational while the new type was being mastered.

In the mid-1970s the Yak-28R and Yak-28PP saw service with the following units based in Soviet territory:

- the 15th VA/886th ORAP at Yekabpils (Latvia, Baltic MD);
- an unidentified ORAP at Shchoochin (Belorussian MD);
- the 14th VA/48th GvORAP at Kolomyya (Carpathian MD);
- an independent ECM squadron of the 24th VA at Chortkov (Ternopol' Region, Carpathian MD) which later became the 118th OAPREB (*ot***del'***nyy* ***a****via***polk** **rah***dioelek***tron***noy bor'***byy** – independent ECM regiment);
- the 511th ORAP at Buyalyk (southern Ukraine, Red Banner Odessa MD);

A Yeisk Military Pilot College/ 963rd Training Air Regiment instructor pilot shows manoeuvres to trainee pilots at Taganrog in 1979, using a model and his hand. The airmen are wearing PPK-1U G-suits, ZSh-3M helmets and ASZh-58 life vests, since they will be flying over the Sea of Azov. Note that the third Su-7BM in the line ('25 Red') has a different tactical code style.



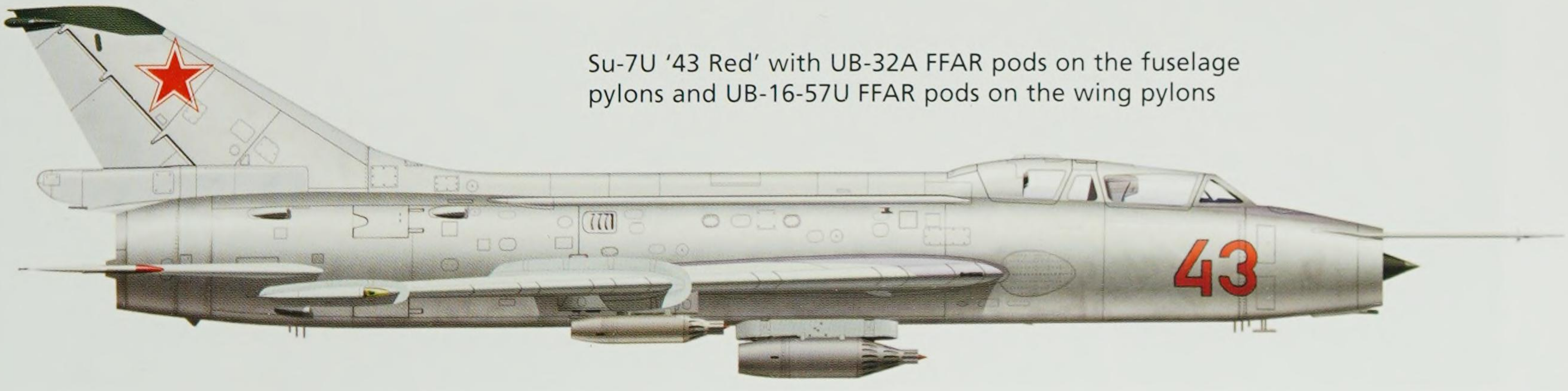
A late-production Su-7U (note the small periscope mirror) completes its landing run. The brake parachute is to be released shortly.

Another scene at Taganrog as 963rd UAP Instructor Pilot 1st Class Capt. Sergey Mamtsev shows manoeuvres to the cadets beside Su-7U '86 Red'. In fact, they are all simply posing for a spectacular photo.

- the 98th GvORAP at Shatalovo AB near Smolensk (Moscow MD);
- the 39th ORAP at Balkhash (Central Asian MD);
- the 87th ORAP at Karshi (Turkestan MD);
- the 799th ORAP at Varfolomeyevka AB (Far Eastern MD);
- the 193rd GvORAP at Ukurey (Trans-baikalian MD).

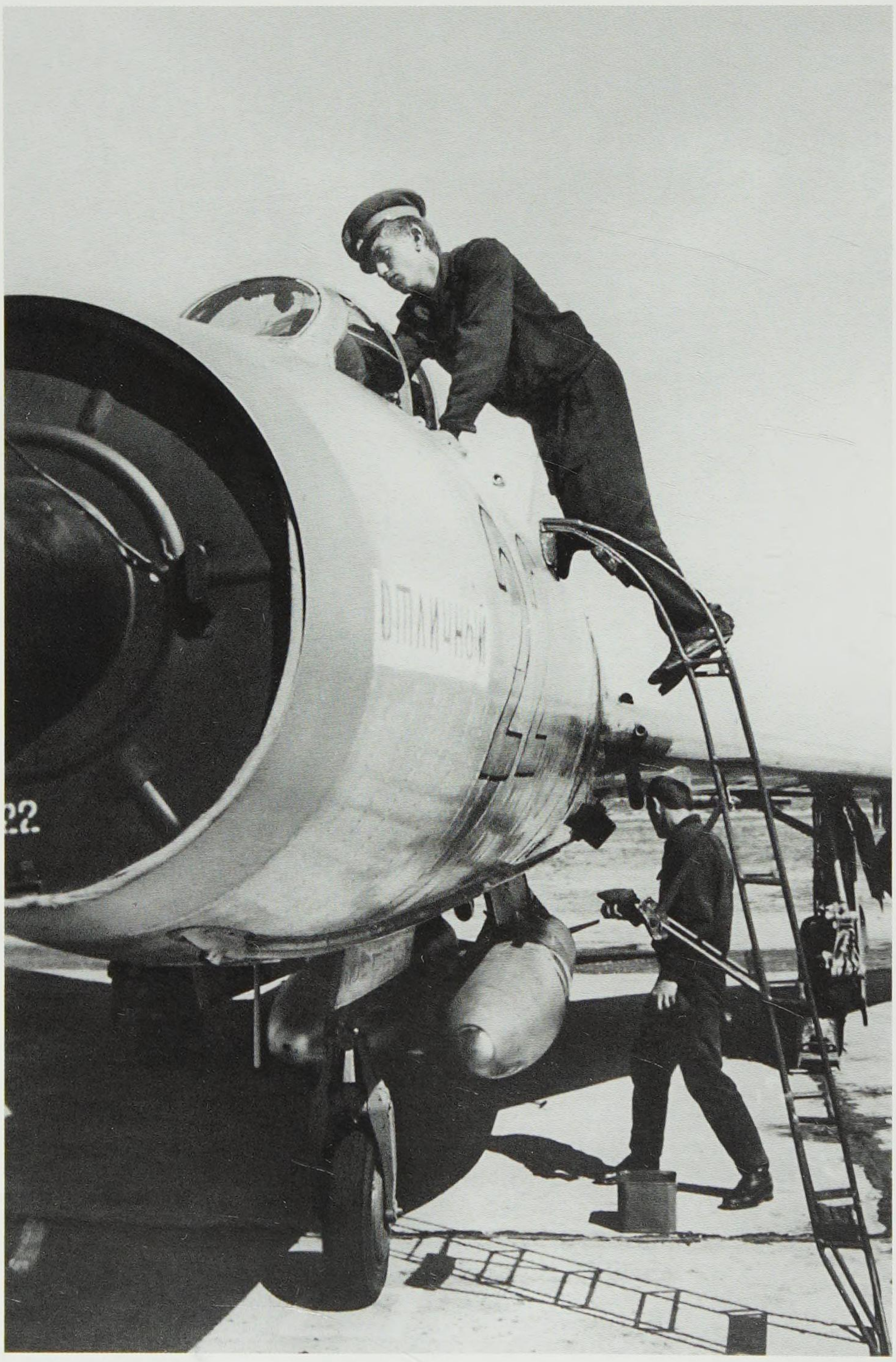
Most of these units operated both versions. Some sources claim the 511th ORAP was part of the 24th VA, Carpathian MD.

The Yak-28R was undoubtedly superior to the other main tactical reconnaissance aircraft of the day, the MiG-21R, since the *Brewer-D* had much longer range, a more capable camera suite and a crew of two (pilot and navigator), which made it a lot easier to locate the target. Likewise, the Yak-28PP's mission equipment may have been rather bulky and heavy, but it was effective. In the mid-1980s the *Brewer-E* was a lot more reliable and hence more effective than the new Su-24MP which had a new ECM suite with lots of bugs to be ironed out.



Su-7U '43 Red' with UB-32A FFAR pods on the fuselage pylons and UB-16-57U FFAR pods on the wing pylons

A Su-7B pilot wearing an old-fashioned leather helmet receives last-minute instructions.



Men at work on a Su-7BM coded '22'. The aircraft wears the legend 'ОТЛИЧНЫЙ' (*ot**lich**nyy* – excellent), which was used as a maintenance award before the 'Excellent aircraft' badge shown on page 92.

In peacetime, SIGINT-configured Yak-28Rs flew up to four sorties a month along the borders of Warsaw Pact nations. These missions, known as *Ras**svet*** (Daybreak), *Kata**pool'**ta* (Catapult) and the like, were often combined with proficiency training for PVO fighter pilots who scrambled to intercept the 'intruder' – without actually firing, of course.

The Yak-28's bomber versions were rarely, if ever, used operationally. In September 1968 a number of Carpathian MD Yak-28Bs (and sister ships stationed in East Germany) participated in the Soviet invasion of Czechoslovakia to stomp out an incipient mutiny; however, that was merely a show of force and the bombers did not fly any actual sorties.

Ironically, the only case when the Yak-28 was used in actual combat was against its own side. This bizarre incident occurred in 1975. On 8th November Captain 3rd Grade (= Lieutenant-Commander) Viktor M. Sablin, the political officer of the Baltic Fleet's Type 1135 (NATO *Krivak I* class) anti-submarine frigate SNS *Storozhevoy*, instigated mutiny and took over control of the ship. That night the frigate left her base in Riga and set course towards Leningrad. Dissatisfied with the Communist Party's interpretation of communism, Sablin intended to cast anchor at the Court Quay, emulating the legendary cruiser RNS *Avrora* in the October Revolution, and broadcast to the Soviet people, exposing the nation's leadership, which was up to their necks in corruption. (SNS = Soviet Navy ship; RNS = Russian Navy ship.)

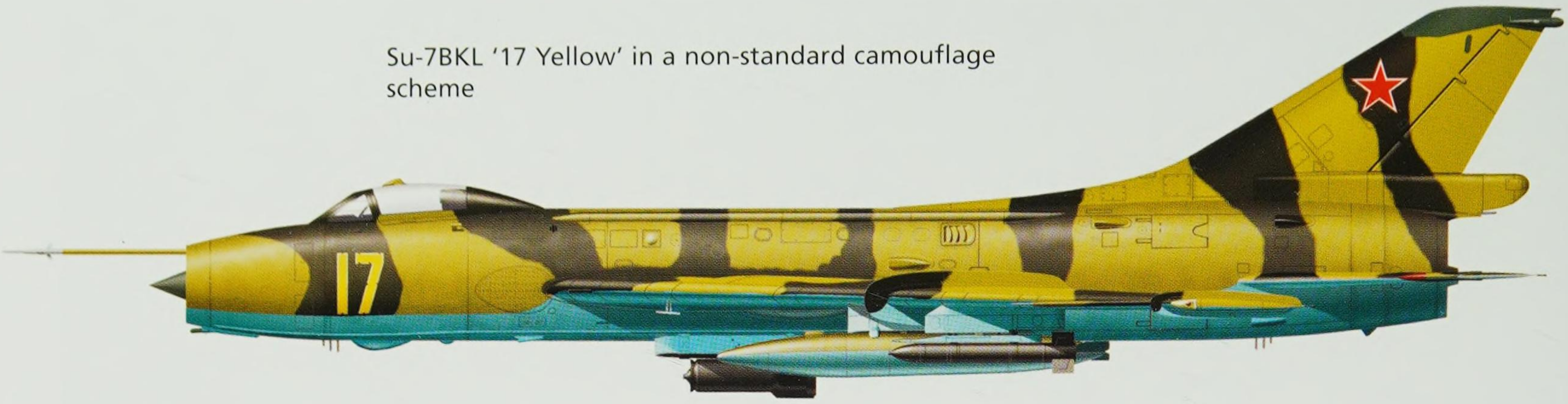
The Soviet government, however, branded the ship's crew as traitors and ordered that the

Storozhevoy be sunk to stop her from defecting to Sweden (which her crew certainly did not intend to). Some hotheads in the government suggested destroying the frigate with a nuclear bomb dropped by a Tu-16A *Badger-A* medium bomber. Fortunately, wiser counsels prevailed and a more moderate order was issued; on 9th November ten 132nd BAD/886th BAP Yak-28Bs led by Lt.-Col. Porotikov scrambled from Tukums in search of the frigate. The bomber crews were wary, since they had been briefed that the ship might fire SAMs at them.

The weather was poor, with heavy clouds and the cloudbase at 150 m (490 ft). Hence Porotikov was the only one who managed to locate the *Storozhevoy* off Ventspils, about 15 nm from the shore. He promptly attacked, dropping a couple of FAB-250 HE bombs close to the ship's stern and damaging the steering; immediately the frigate stopped and her crew, some of whom were injured, surrendered. Unfortunately, before the Powers That Be were so informed and aborted the mission, two more Yaks had found a target – the wrong ship in both cases. One aircraft scored a hit against a Soviet bulker bound for Finland; miraculously, no one was killed. The other attacked nothing less then the cutter of the Red Banner Baltic Fleet Commander but fortunately missed. Of course, the justifiably angry Baltic Shipping Company raised hell; the Navy had to make up for the damage done, repairing the bulker and presenting the crew with several 20-litre (4.4 Imp gal) jerrycans of pure alcohol as a moral compensation. In return

Using a work platform, a technician loads a packed brake parachute into the parachute housing of a Su-7U trainer. The other technician stands by, ready to connect the parachute cables to the lock.

Su-7BKLs in natural metal finish on the flight line.



Su-7BKL '17 Yellow' in a non-standard camouflage scheme

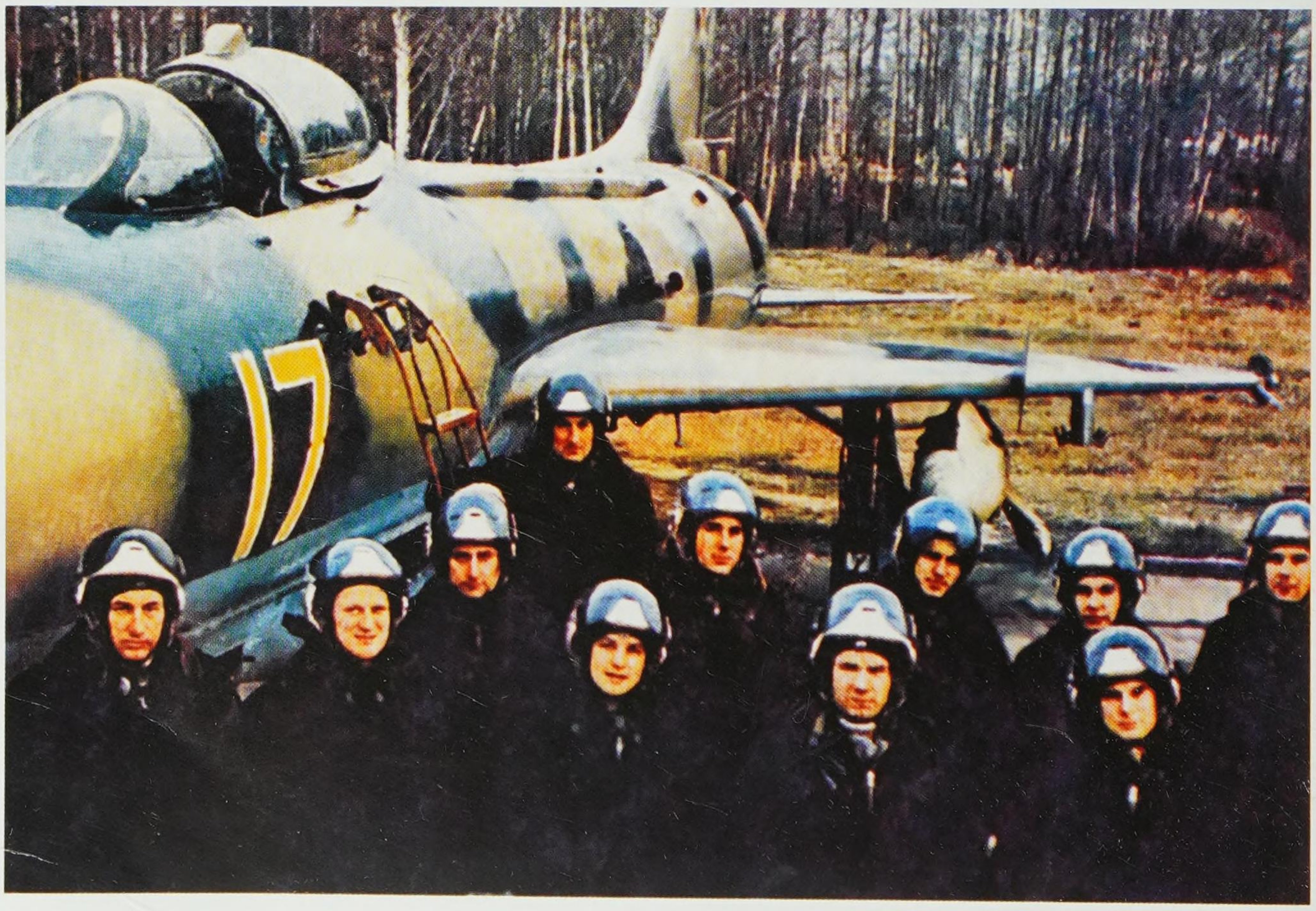
they got a bucketful of bomb splinters collected aboard the ship.

The reconnaissance version, on the other hand, saw considerable action. The Yak-28R was used in the border conflict with China over Damanskiy and Kirkinskiy Islands on the Amur River in March 1969.

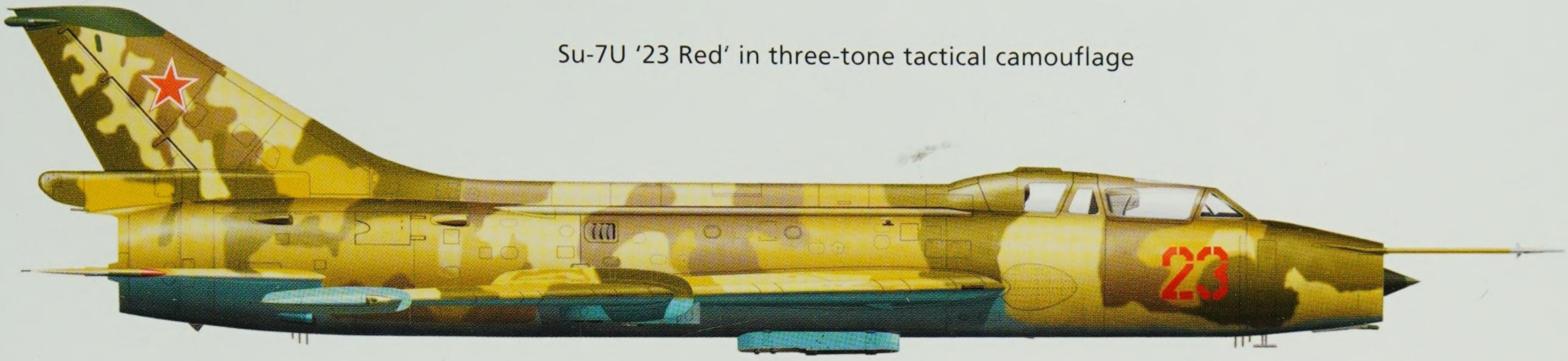
In 1965 the Soviet Air Force introduced the Distinguished Military Pilot and Distinguished Military Navigator grades as an incentive to the most highly skilled airmen. These grades were introduced by a decree of the Presidium of the USSR Supreme Soviet on 26th January 1965. Rather unwisely, on 22nd August 1988 the same legislative body issued another decree abolishing these grades; on 20th February 1992, however, the Distinguished Military Pilot and Distinguished Military Navigator grades were reinstated in the Russian Air Force.

In the mid-1960s the national aircraft industry and the Soviet MoD launched an intensive effort to re-equip the Tactical Aviation with new aircraft types. In the early 1970s the MiG-21 second-generation fighter started giving place to the MiG-23 *Flogger* third-generation fighter with variable-geometry (VG) wings; in the fighter-bomber regiments the obsolescent Su-7BM/Su-7BKL was similarly replaced by the 'swing-wing' Su-17 *Fitter-C* and MiG-23B *Flogger-F*.

When the MiG-23M *Flogger-B* entered large-scale production and was fielded by the Tactical Aviation, the accident rate soared, approaching that of the US Air Force's Lockheed F-104 Starfighter and the Royal Air Force's BAC Lightning – the attrition record holders in the western world. Eventually, however, the manufacturing defects were eradicated and in a few years the MiG-23M



Su-7BKL '17 Yellow' wears an unusual two-tone green camouflage. The yellow tactical code is also unusual for an Air Force aircraft.



Su-7U '23 Red' in three-tone tactical camouflage

reached an adequate reliability standard. It earned respect, if not genuine affection, as the pilots discovered its virtues to which they had been unaccustomed on the MiG-21. One of them was the high automation level of combat sorties. From the moment the fighter lined up for take-off to the moment radar lock-on was achieved, the MiG-23M was guided towards the target without a single spoken command from the GCI officer; the symbols displayed on the head-up display (HUD) by the *La**zoor'*** (Prussian Blue) command link system did the trick.

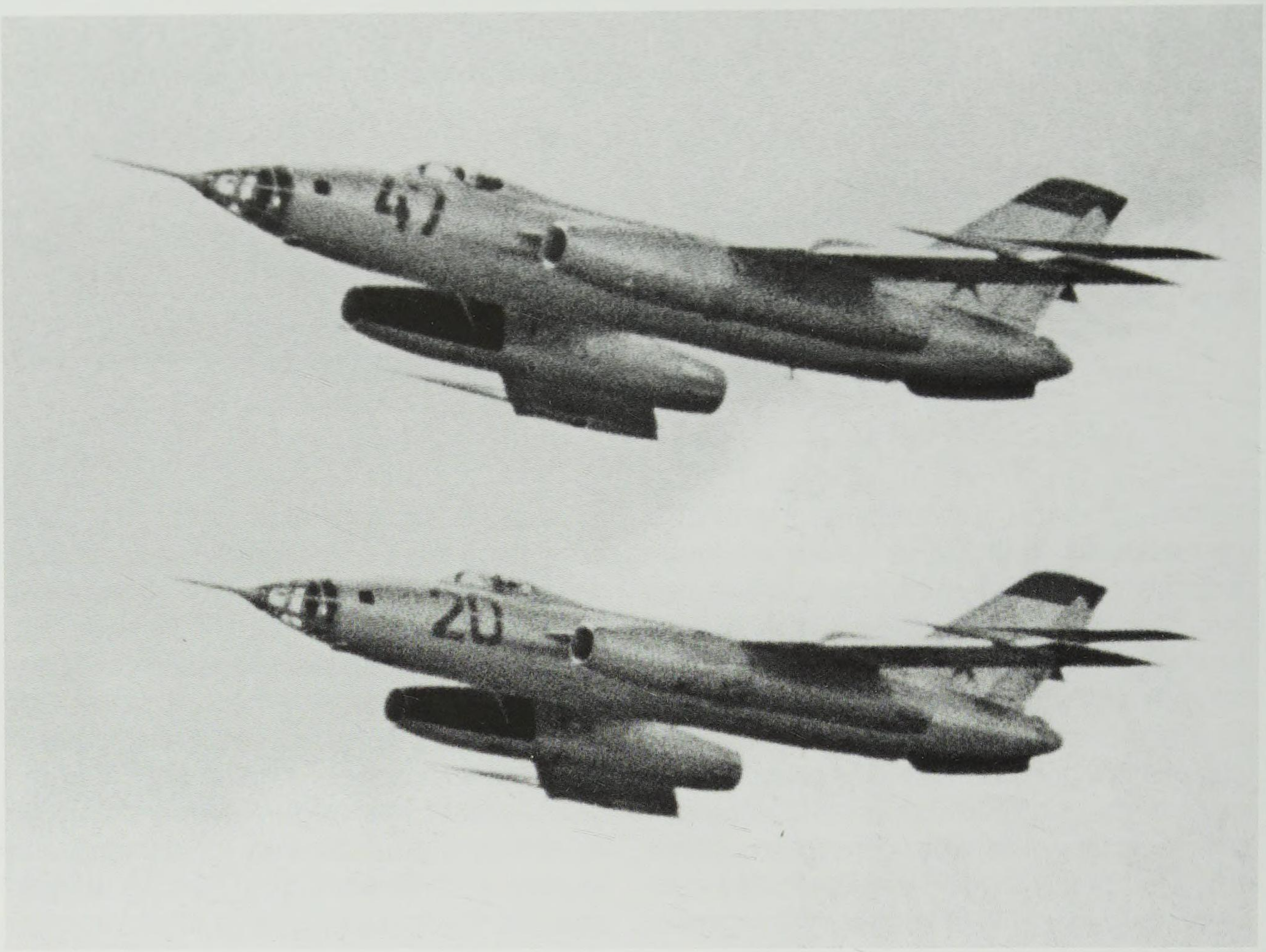
Service pilots were quick to appreciate the MiG-23's ascendancy over its predecessor. The RSBN-6 short-range radio navigation system (***rah**diotekh**nich**eskaya sis**tem**a **blizh**ney navi**gah**tsii* – SHORAN) facilitated navigation considerably, and the avionics suite included a powerful RP-23 *Sap**feer-2**3* (Sapphire) fire control radar and a TP-23 forward-looking infrared sensor (***tep**lopelen**gah**tor*) providing the pilot with a wealth of target information. On the other hand, the far more complex avionics placed higher demands on the service pilots' training level. Poor training could lead to mission failure and meant the fighter's potential was not used to the full. Practice launches of R-13M (AA-2-2 *Advanced Atoll*) AAMs from the fuselage pylons required the pilots to observe the flight manual strictly in order to prevent engine surge; vigorous manoeuvring at low altitude without resorting to information support from ground control centres would cause co-ordinate measurement errors of the navigation system to snowball.

The ground personnel, too, found the MiG-23 much harder to deal with. In particular, the *Flogger* required all taxiways and runways to be kept free from loose stones and other objects in order to preclude foreign object damage (FOD) to the engine. In the event of FOD or any other reason necessitating an engine change, this procedure took at least a full day, if the ground staff was lucky; normally the engine change and the subsequent ground checks of the engine meant about 72 hours' downtime.

The RP-23 radar, too, was quite capricious and often failed. One of the worst bugs was the radar set's liquid cooling system, which was filled with a glycol solution instead of the usual water/alcohol mixture that was so popular with the ground crews (guess why) and was quite unreliable. The ARK-15 automatic direction finder also gave cause for complaints. One more problem area was the avionics/equipment bay aft of the cockpit, which was not adequately sealed against moisture; water condensing inside the bay would occasionally seep into the electric connectors and cause short circuits, knocking out the power supply. However, if we are to be perfectly honest, the avionics of the MiG-23's contemporary foreign counterparts were not a whole lot more reliable.

Cases of wing sweep change actuator failures were recorded during the MiG-23's service introduction phase. As a result, for a while the pilot training had to be restricted to flights along designated routes and beyond-visual-range (BVR) combat training using medium-range AAMs. Once the wing torsion box and pivots had been reinforced, the *Flogger* pilots started practicing dogfights; in fact, almost every single practice intercept in daytime VMC ended in a mock dogfight. During such air combat training sessions the fighters operated in pairs or flights of four, which was in line with the tactics of local wars.

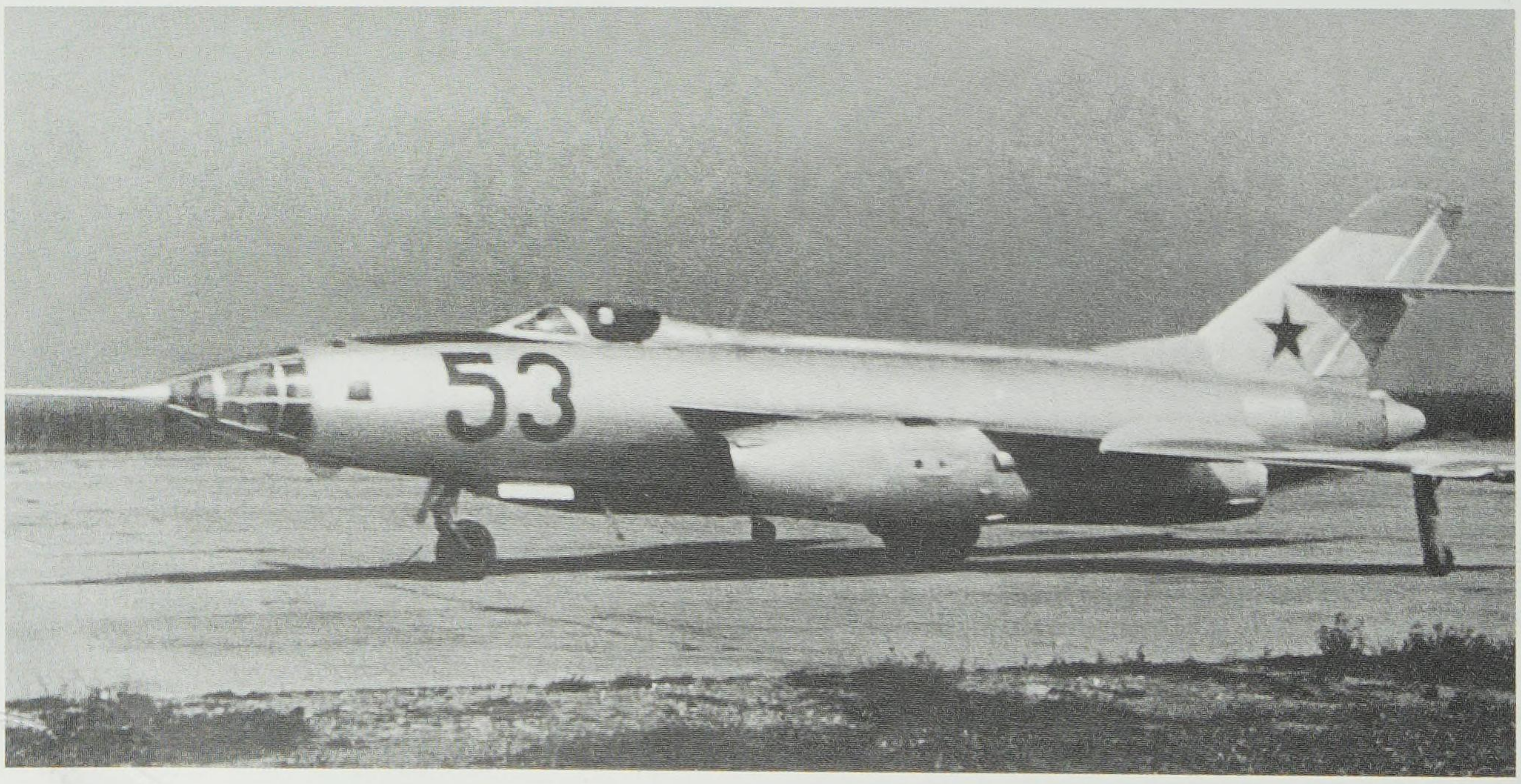
In the autumn of 1975 one of the squadrons of the Aircrew Training Centre at Maryy AB re-equipped with MiG-23Ms. These *Floggers* acted as 'aggressor' aircraft opposing the pilots of first-line units that were being coached in air combat tactics. Later, in 1984, the 'aggressor' unit at Maryy re-equipped with the more advanced MiG-23MLD *Flogger-K*.



Two Yak-27R tactical reconnaissance aircraft make a formation flypast at an air parade. Note the anti-glare panels on the inboard sides of the nacelles.

By the mid-1980s the MiG-23M, MiG-23ML *Flogger-G* and MiG-23MLD had become the most widespread fighters in the Soviet Air Force, and probably the most combat-capable ones as well. The MiG-23s had enough service life remaining to last at least another 15-20 years. Yet, towards the end of the 1980s the MiG-29 *Fulcrum* and the Su-27 *Flanker* – the Soviet fourth-generation fighters – had entered service and were displacing the MiG-23 in the most important areas.

In addition to air superiority fighters, the *Flogger* family included a number of fighter-bomber versions which were actually more popular with the Tactical Aviation personnel. The aforementioned MiG-23B was the first of these, and the first three *Flogger-Hs* were delivered to the 760th SAP of the 4th TsBP i PLS in Lipetsk on 30th May 1973, followed by a fourth aircraft a month later. Even though the MiG-23B's appearance was classified at the time, the residents of Lipetsk were quick to note the unfamiliar jets overhead painted in a mottled camouflage and festooned with bombs. The MiG-23B's chief identification feature was of course the totally redesigned nose



At rest the Yak-27R sat rather low over the ground. The blister under the nose houses the lens of the navigator's sighting device.

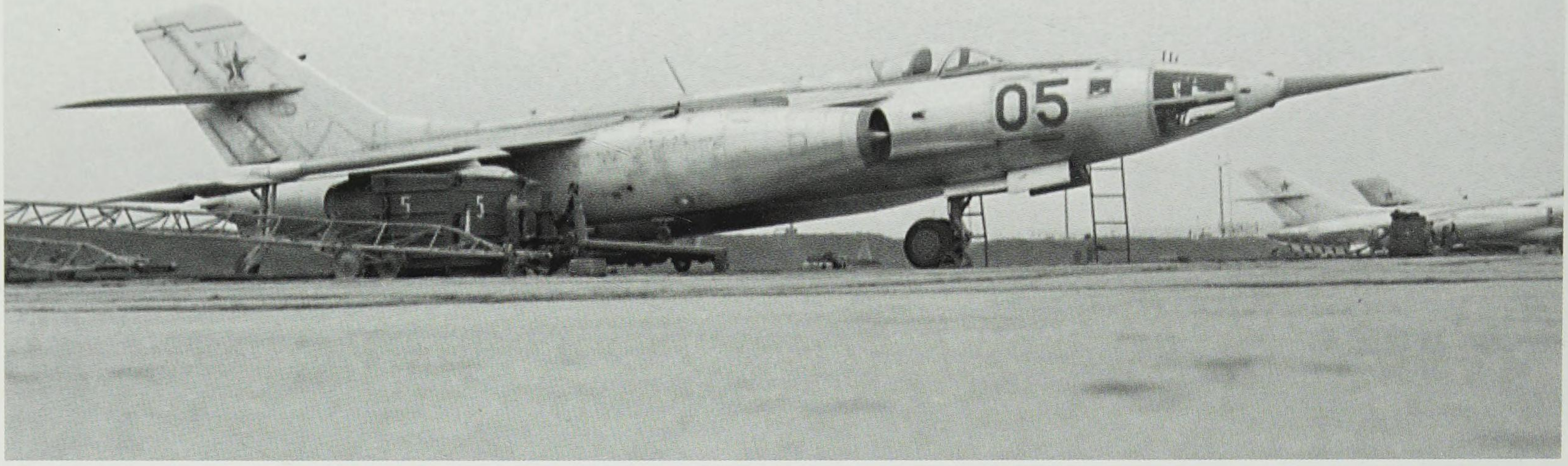
A Yak-27R undergoes maintenance, with the port engine partially uncowled.

lacking a radar, which was drooped to give the pilot a good field of view downward when attacking ground targets. Because of the distinctive nose profile the local wits were quick to dub it 'Gena the Crocodile' (a much-loved Soviet cartoon character created by Eduard Uspenskiy – a well-mannered crocodile).

The MiG-23B remained in service with the Lipetsk training centre until 1977 when it was superseded by the MiG-27 *Flogger-D*, another 'crocodile'. In 1973 the 722nd OIBAP stationed at Smoorav'yovo AB near Gdov (Pskov Region, Leningrad MD) and commanded by Lt.-Col. Chesnochenko re-equipped with the MiG-23B. This was destined to be the sole first-line unit flying the type.

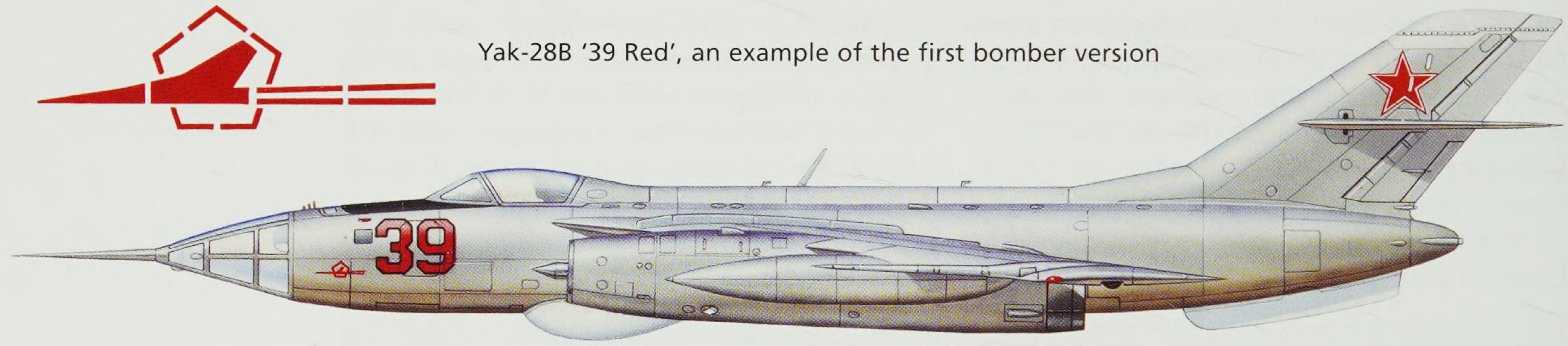
The Air Force gave the new fighter-bomber a warm reception – a marked contrast to the

Yak-27R '18 Red' serves as the 'victim' during an NBC protection exercise.

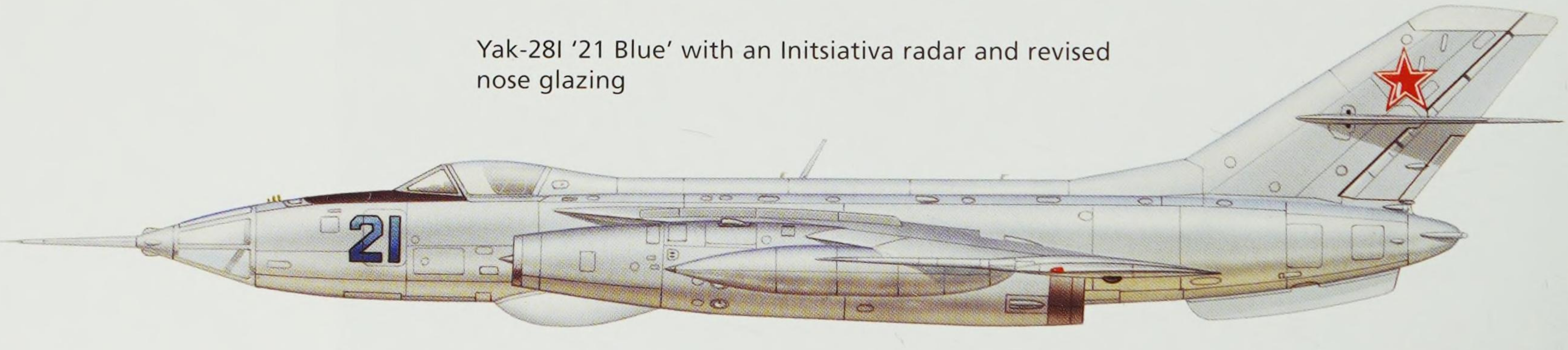


Yak-28L bombers on the flight line.

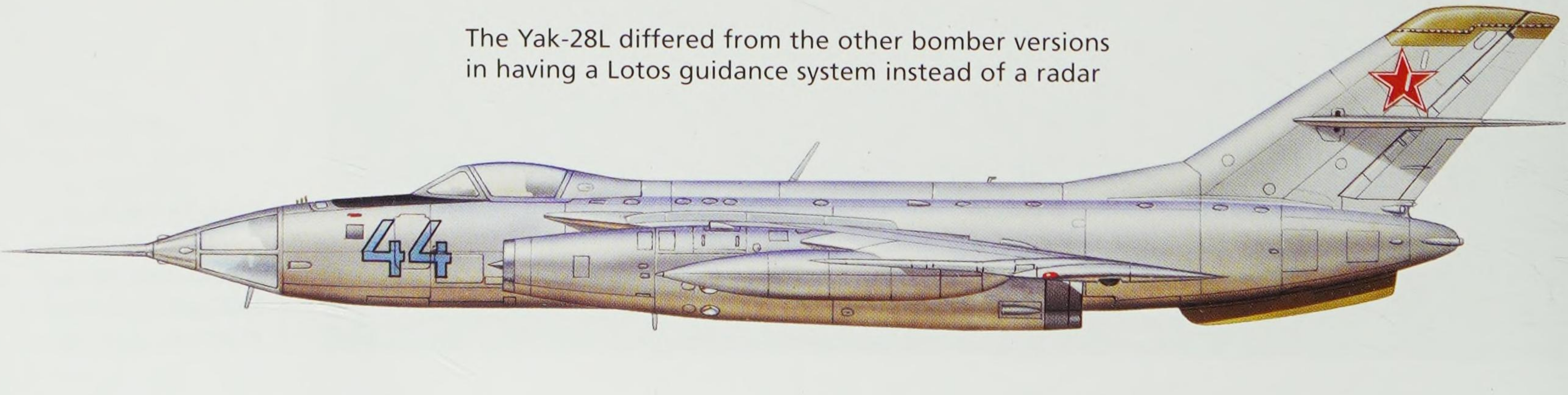
MiG-23S *Flogger-A* (the initial fighter model built in small numbers), which had drawn heavy criticism. The military praised the MiG-23B's cockpit ergonomics, the high degree of automation, the excellent field of view and the single-point refuelling feature (the latter was introduced on Soviet military aircraft much later than on western machines). The VG wings endowed the MiG-23B with good field performance; the Su-7B had a take-off run of 1,450 m (4,760 ft) and a landing run of 1,000 m (3,280 ft) while the corresponding figures for the *Flogger-H* were 700 m (2,300 ft) and 800 m (2,625 ft). The landing speed



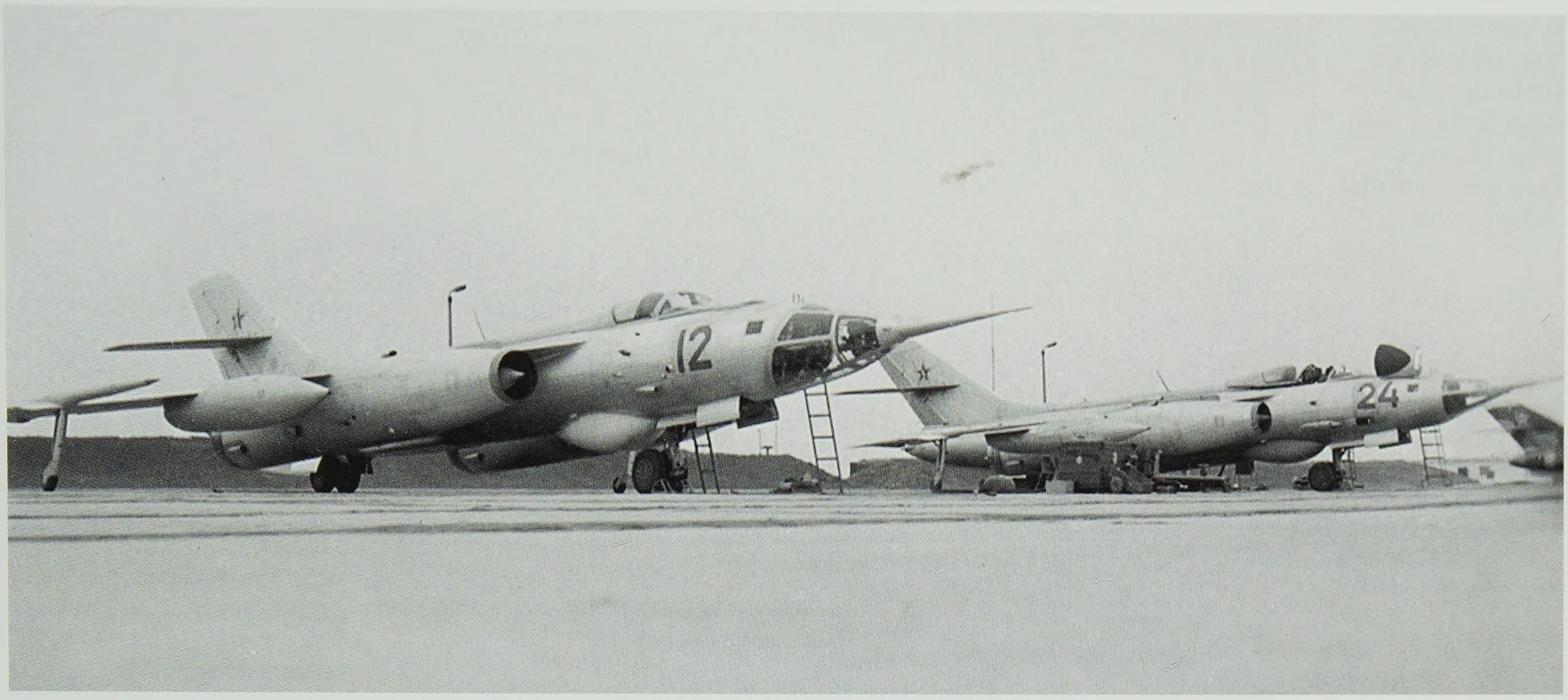
Yak-28B '39 Red', an example of the first bomber version



Yak-28I '21 Blue' with an Initsiativa radar and revised nose glazing



The Yak-28L differed from the other bomber versions in having a Lotos guidance system instead of a radar



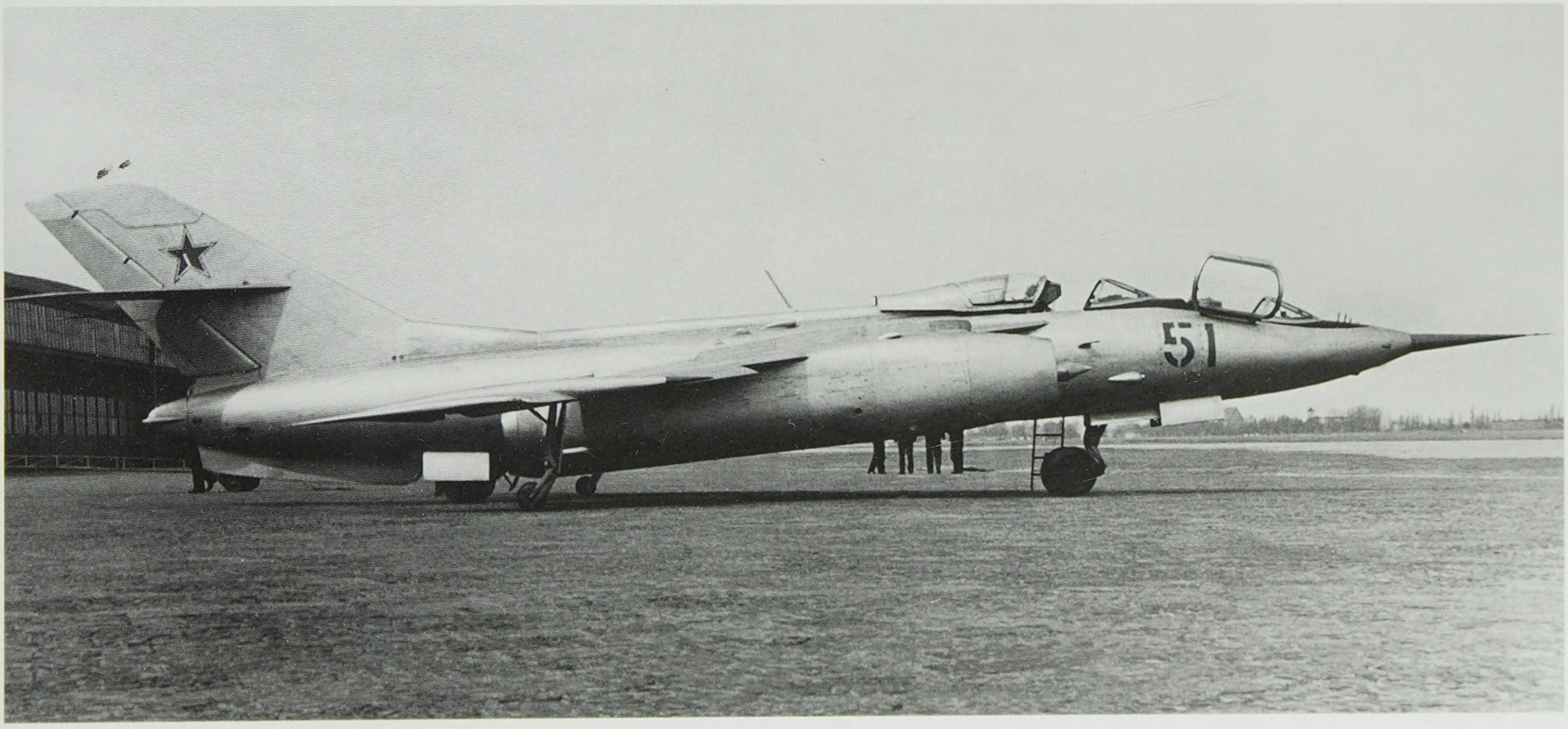
Yak-28R '12 Red' differs from the Yak-28I next to it, having increased glazing area for the navigator and larger drop tanks.

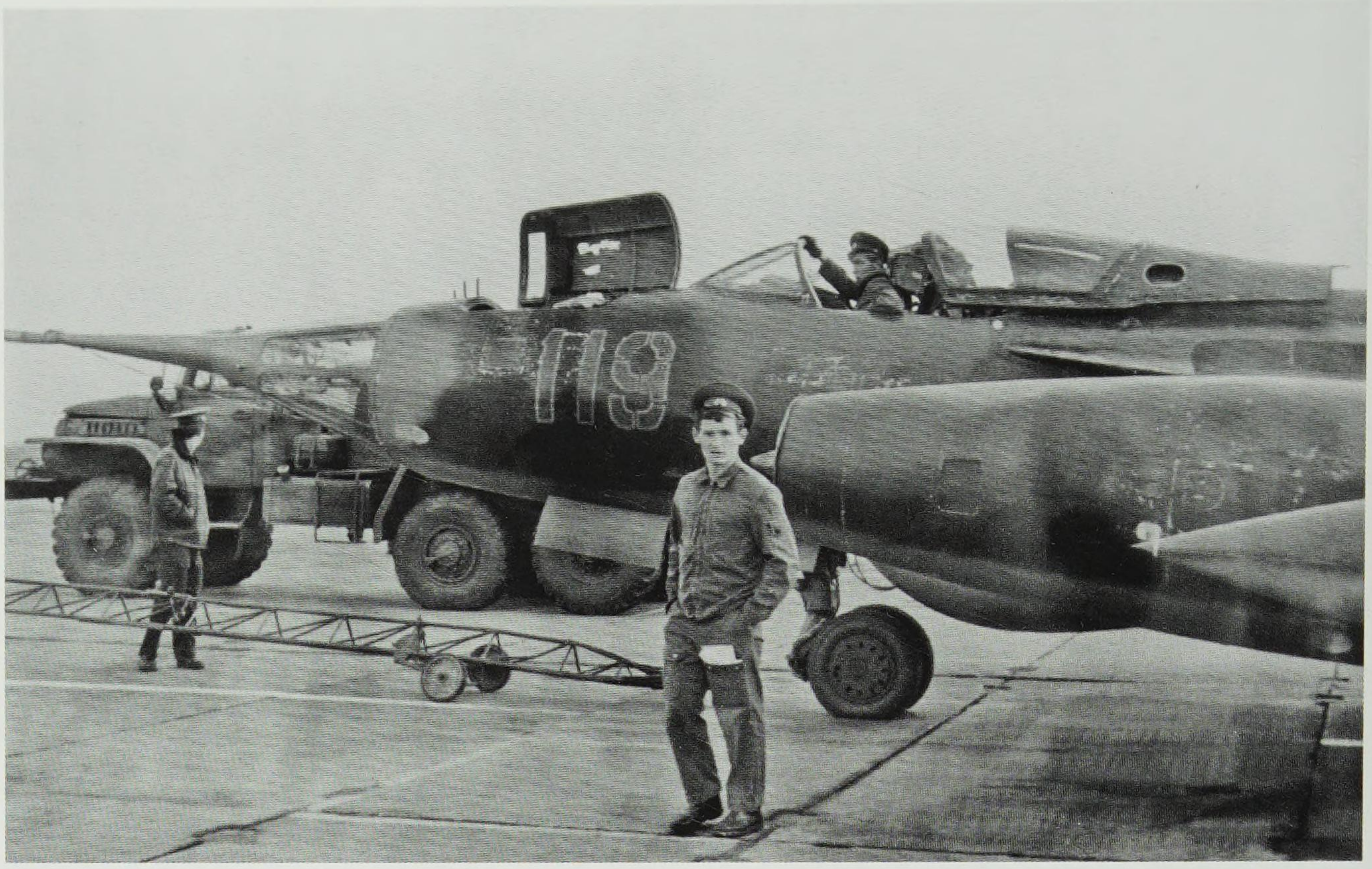
was also considerably lower – 255 km/h (158 mph) versus 300 km/h (186 mph) for the Su-7B. The MiG was more agile and easier to fly than the *Fitter-A*, especially the heavier Su-7BM and Su-7BKL versions. It passed Mach 1 with ease, accelerating to 1,350 km/h (838 mph) at sea level; with a 3,000-kg (6,610-lb) full ordnance load it could do up to 1,000 km/h (621 mph) at ultra-low level. The MiG-23B rated higher from the ground staff's point of view, too; it sat lower when parked, which meant most airframe components and equipment items could be reached easily from ground level without using ladders, and the large access panels facilitated maintenance of the avionics.

The MiG-23B's Achilles' heel was the troublesome Lyul'ka AL-21F-3 afterburning turbojet and the equally troublesome avionics. Also, as compared to the Su-17M *Fitter-C*, the aircraft had marginally lower performance and was more demanding to fly.

On 9th July 1974 the 760th SAP of the Lipetsk training centre took delivery of four production MiG-23BN *Flogger-F* fighter-bombers – the export model powered by a Tumanskiy R29B-300 afterburning turbojet. These remained in Lipetsk until September and were later transferred to the 722nd OIBAP, which completed its re-equipment from the Su-7B by the end of the year. The 642nd IBAP in Voznesensk (Odessa MD) was another MiG-23BN operator. In 1975 both units traded their MiG-23BNs for new MiG-27s, transferring the *Flogger-Fs* to other regiments; the latter included the 122nd IBAP in Taldy-Kurgan

A production Yak-28U trainer coded '51 Blue'. Note the sideways-opening canopy of the instructor's cockpit.



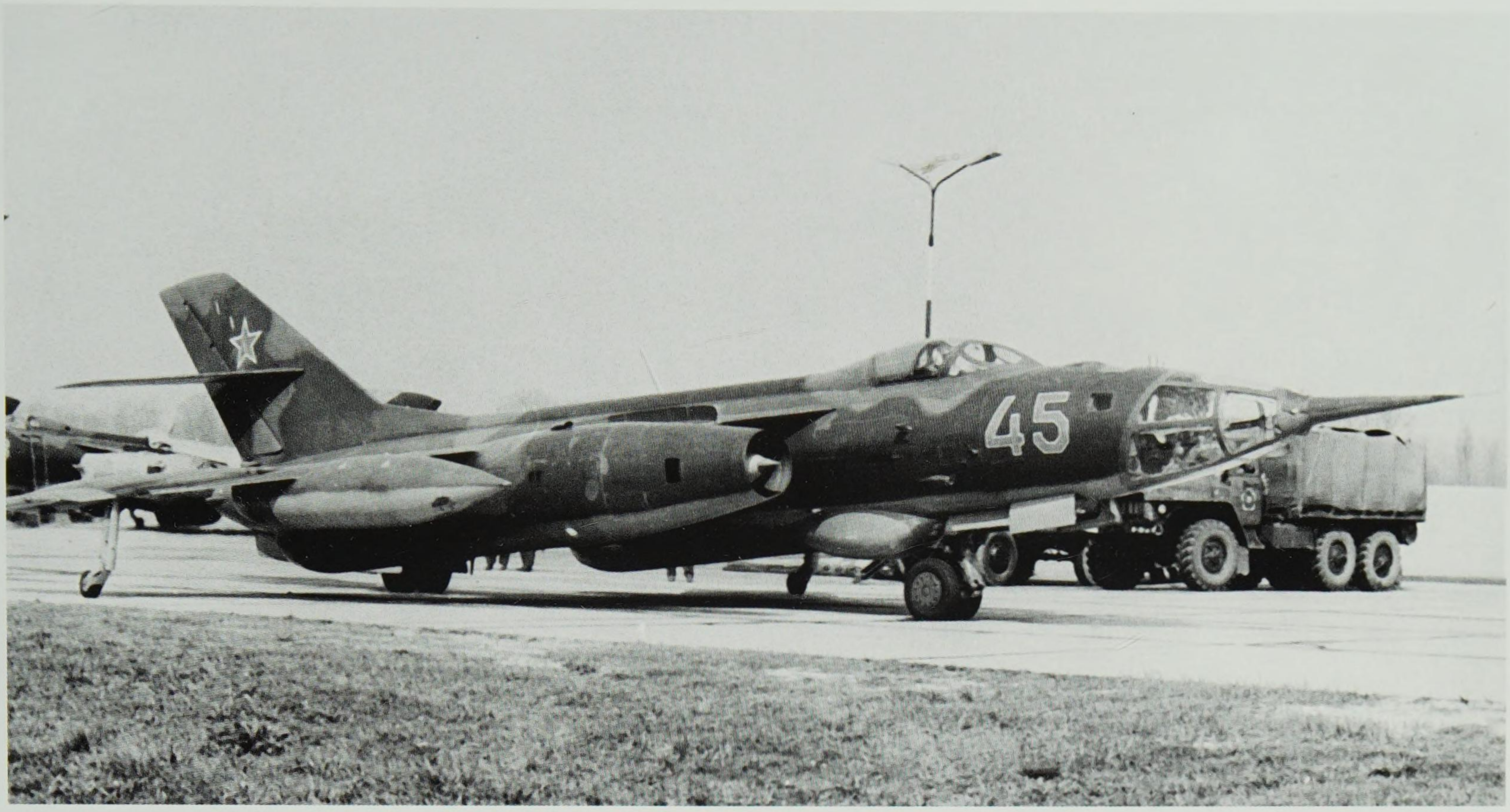


A camouflaged Yak-28I with an unusual three-digit tactical code. Note the truss-type design of the Yak's towbar.

(Kazakhstan, Central Asian MD) and the 58th IBAP at Step'-Olovyannaya AB (Transbaikalian MD). In 1988 the Soviet Air Force phased out the *Flogger-H/F*.

With their analogue-era avionics, the MiG-23B and MiG-23BN were largely regarded as interim types meeting the Soviet Air Force's requirements for a third-generation strike aircraft only partly. Their successor, the MiG-27 (originally known as the MiG-23BM), featured much more advanced digital avionics, a wider range of compatible weapons and other refinements, including redesigned fixed-area air intakes. The PrNK-23S navigation/attack suite (*pri**tsel'**no-navigatsi**on**nyy **kom**pleks*) performed 11 tasks, including flight

This publicity photo is interesting in that it shows a camouflaged Yak-28R with an 'Excellent aircraft' badge.



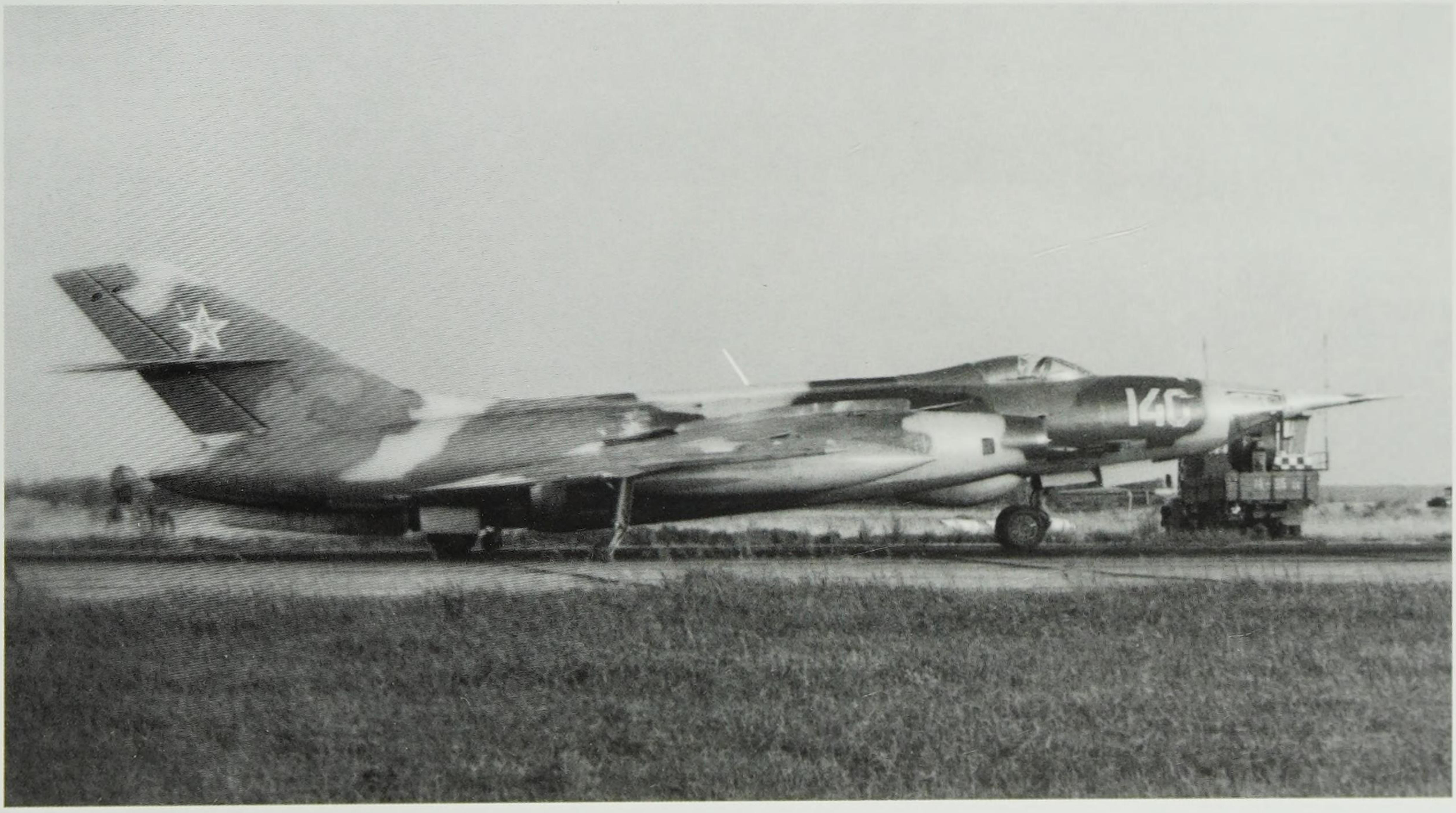
Yak-28R '45 Red' in two-tone camouflage, probably from the same unit as '57 Red'.

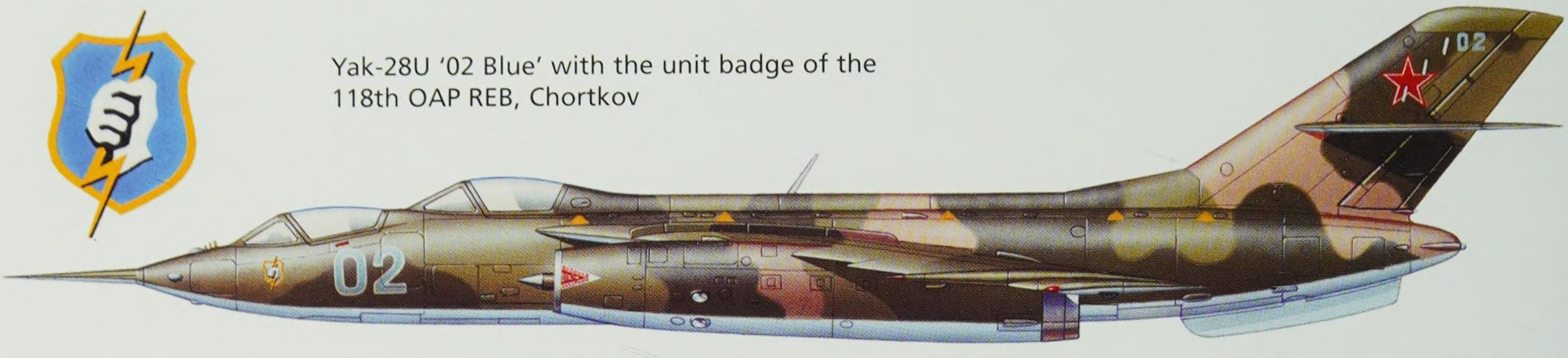
along a pre-programmed route with waypoints, automatic return to the point of origin or to any of four pre-entered alternate airfields ('go-to' function), landing approach, and so-called 'navigation bombing' (when bombs are released with no direct view of the target whose co-ordinates are known). An important new feature was the 30-mm Gryazev/Shipunov GSh-6-30 six-barrel Gatling-type cannon which packed a much bigger punch than the predecessor's 23-mm GSh-23L twin-barrel cannon. The ordnance load was increased to 4,000 kg (8,820 lb).

As mentioned earlier, the 722nd OIBAP and the 642nd IBAP were the first to re-equip with the MiG-27. The transition was seamless, being facilitated a lot by the personnel's considerable experience with the MiG-23B/BN.

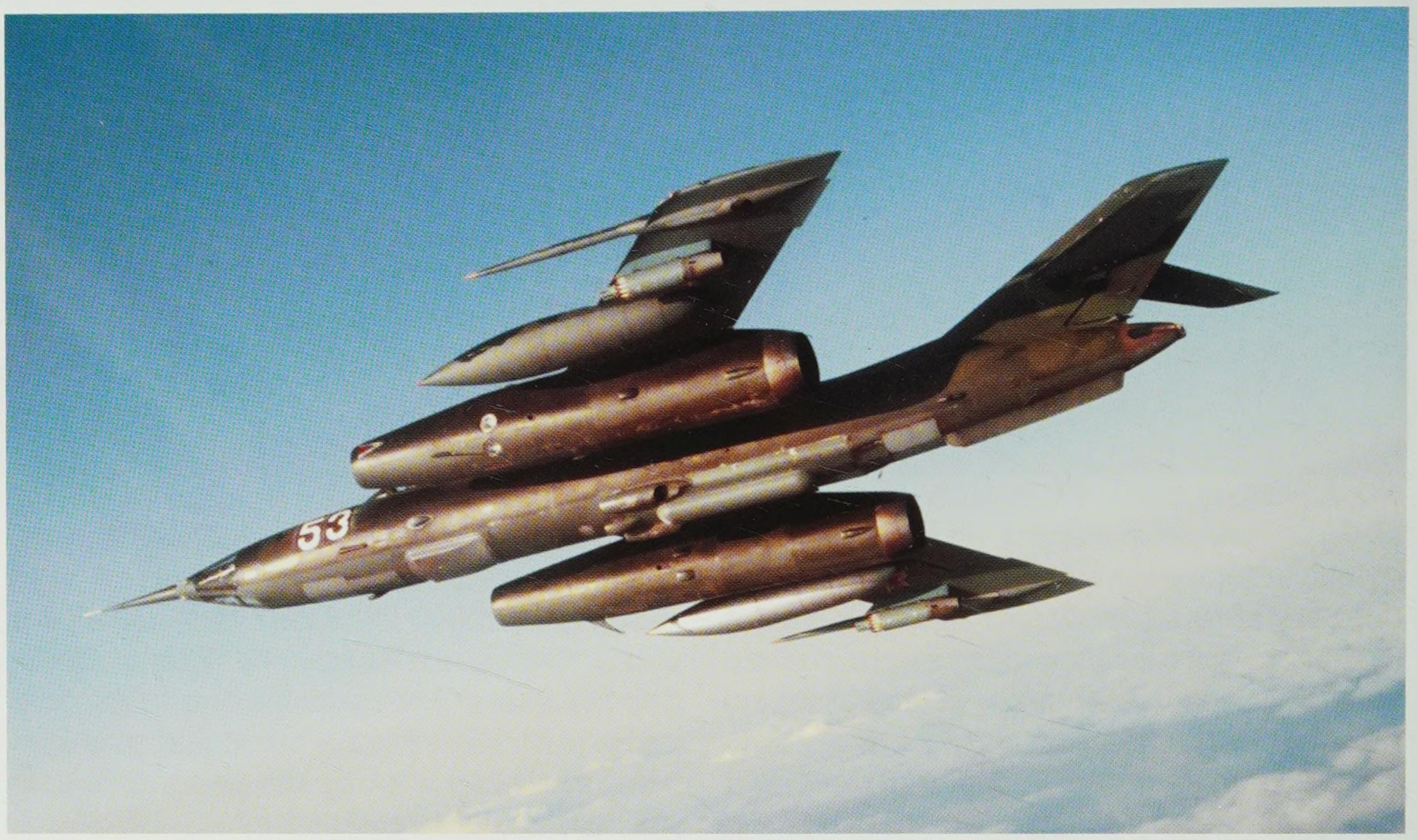
The MiG-27 won recognition in the Air Force straight away thanks to its ease of flying,

This Yak-28I in three-tone camouflage again has a three-digit code, '140 Blue'.



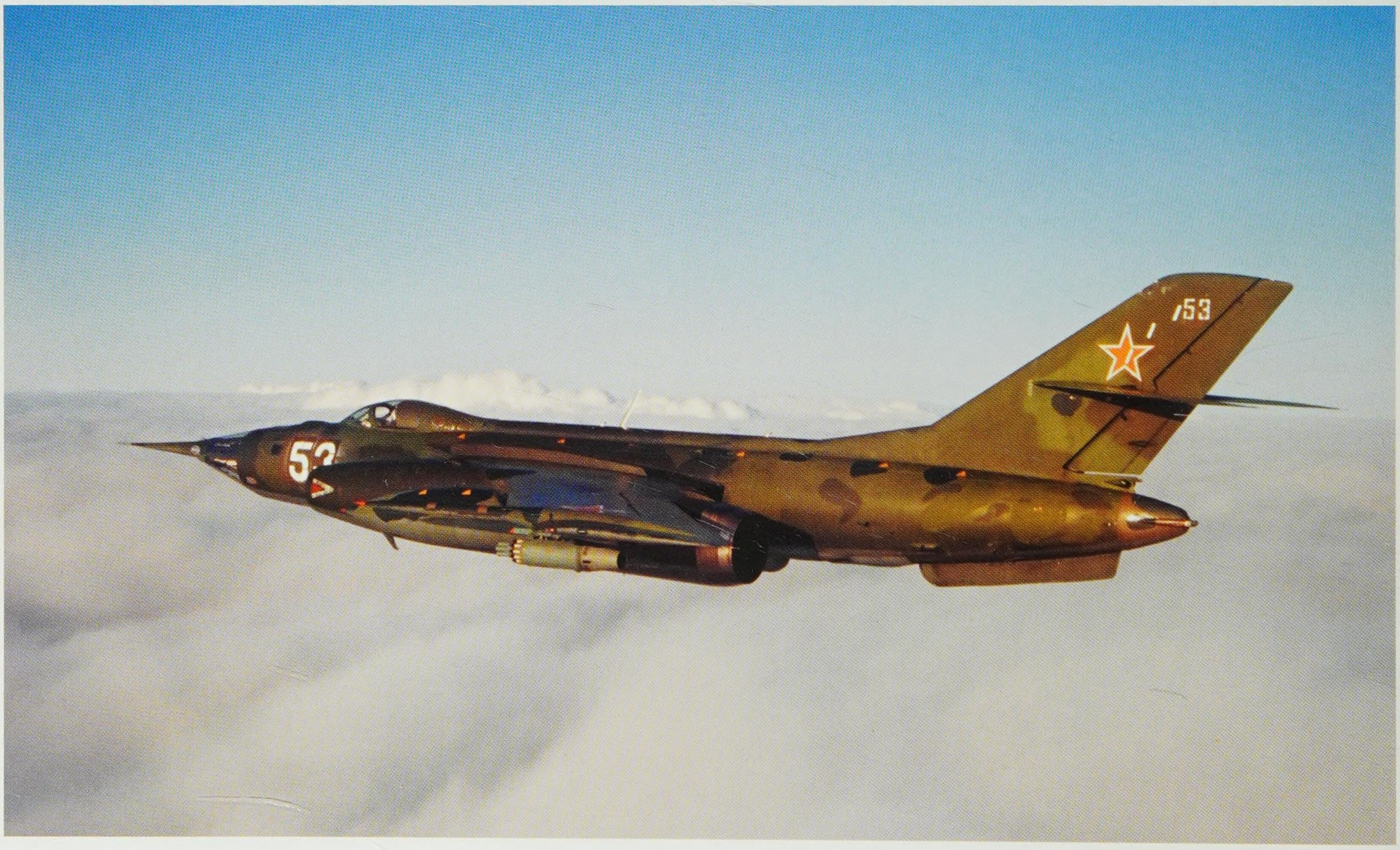


Yak-28U '02 Blue' with the unit badge of the 118th OAP REB, Chortkov



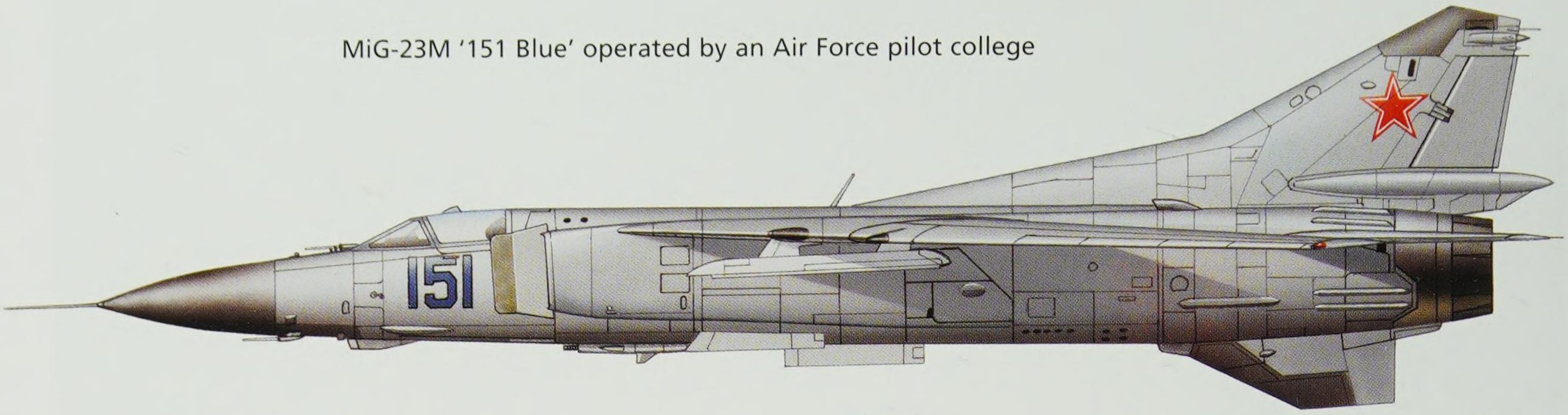
A fine study of a Yak-28PP showing the ventral canoe fairing of the jammer suite and the associated heat exchangers.

Another view of Yak-28PP '53 White'. The rocket pods under the wings were loaded with chaff-filled S-5 FFARs for self-protection.

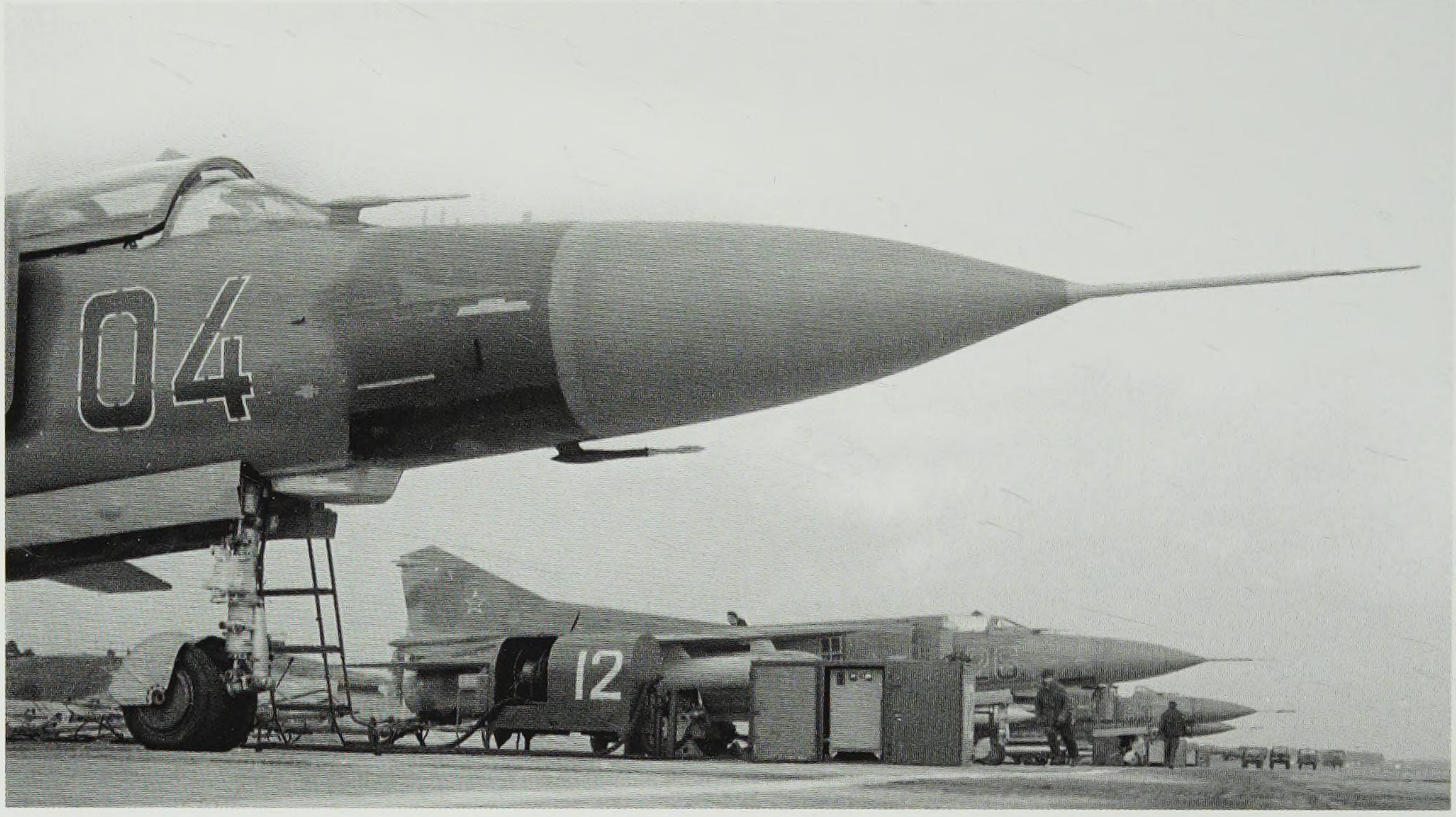


60

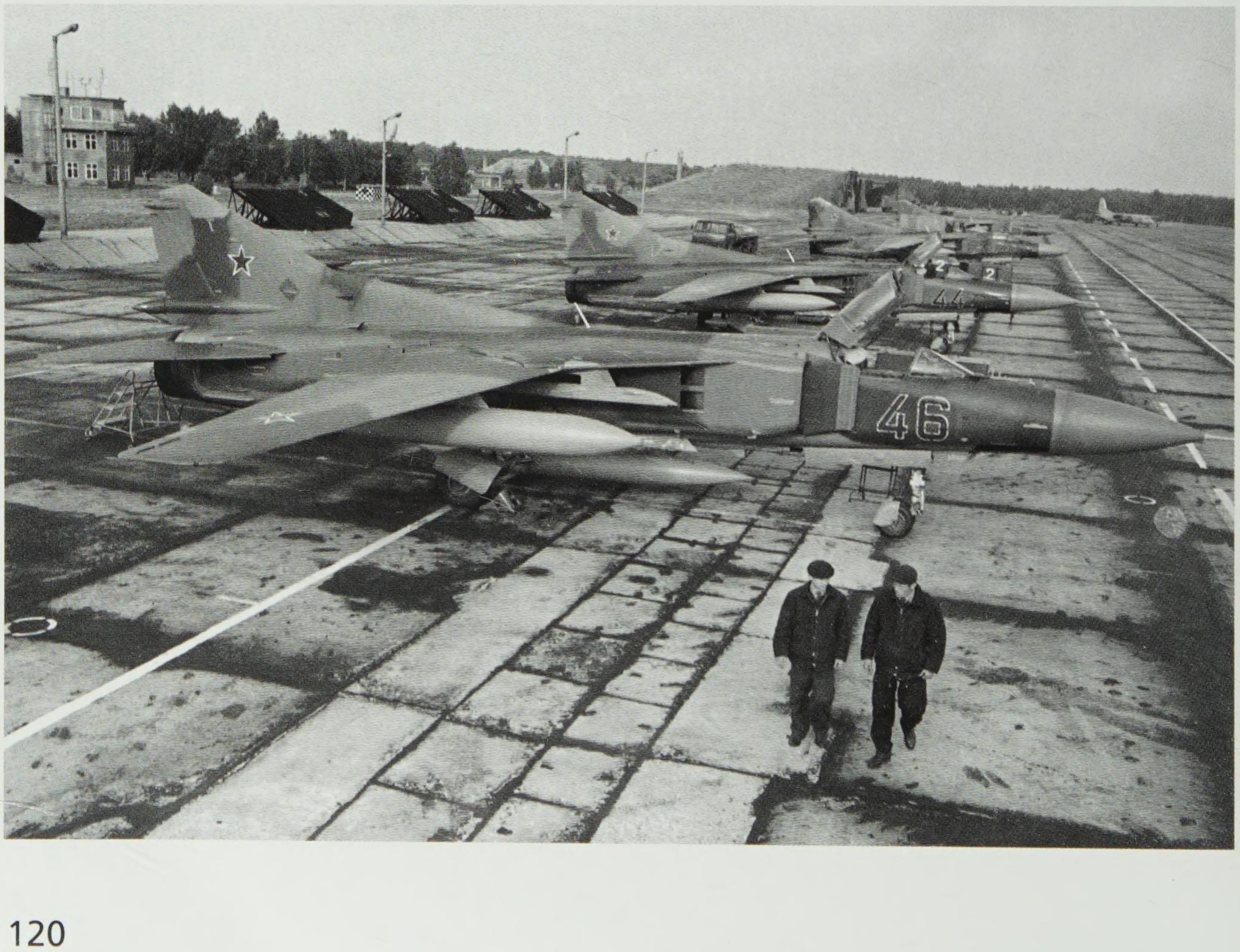
MiG-23M '151 Blue' operated by an Air Force pilot college



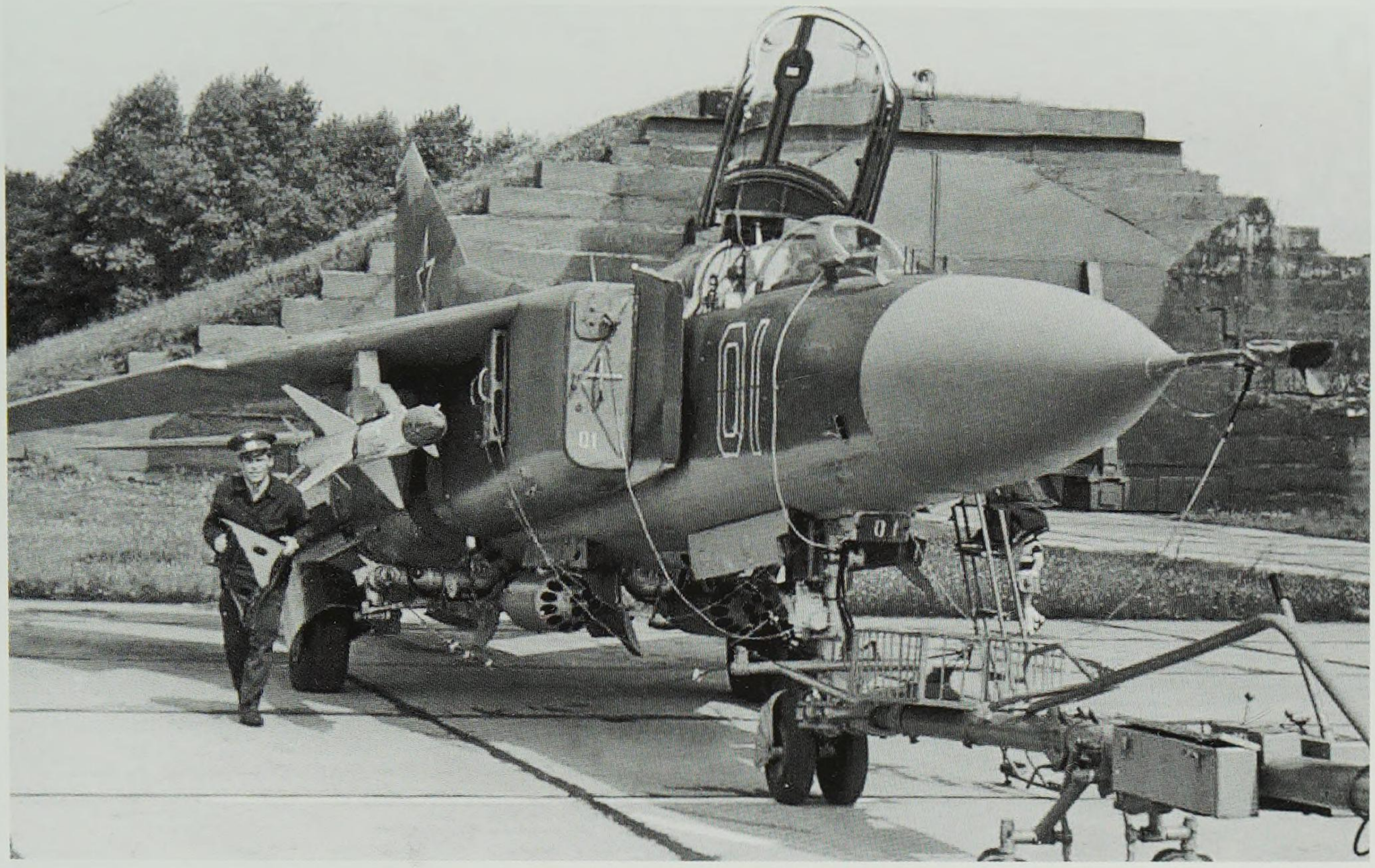
Previous page: An atmospheric twilight shot of a pair of Yak-28PPs.



Camouflaged MiG-23Ms on a flight line with centralised refuelling.



A quartet of MiG-23Ms in ferry configuration with three drop tanks. Only the 16° minimum sweep setting could be used with the underwing tanks.

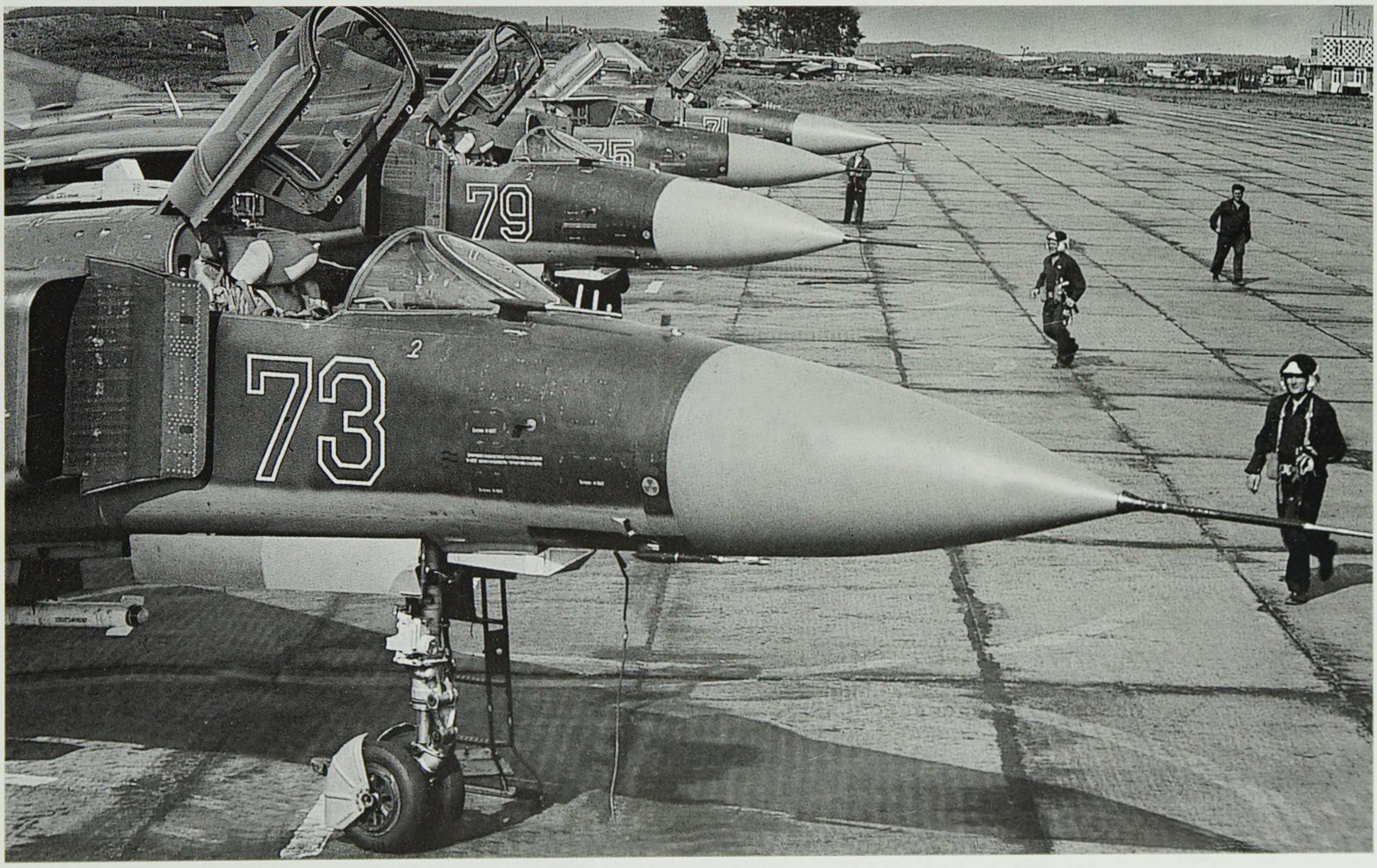


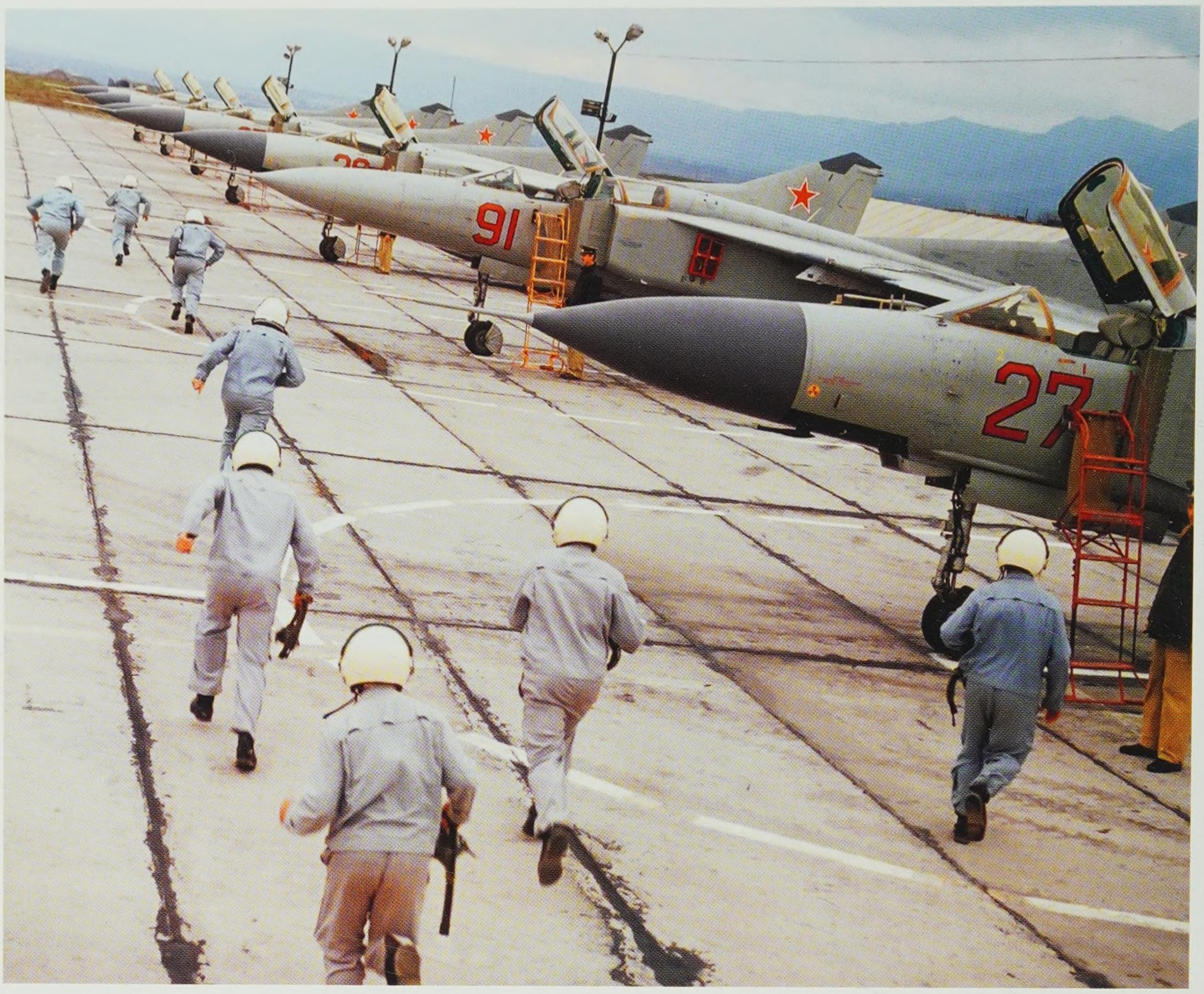
A MiG-23M carrying a mix of R-24 AAMs and FFAR pods. Unusually, there is no black anti-glare panel for the undernose TP-23 FLIR sensor.

reasonably high manoeuvrability for an aircraft of this class and good acceleration. The new digital navigation/attack suite had improved its combat efficiency markedly over the predecessor. The MiG-27 could perform most of the aerobatic manoeuvres – both 'clean' and with most external stores options. The spin was a no-no for ordinary service pilots, though; but then, the same restriction applied to other supersonic aircraft, such as the McDonnell Douglas F-4 Phantom II.

It should be noted that OKB-155 was incessantly working on improving the MiG-27, and the late versions – the MiG-27M/MiG-27D *Flogger-J* and especially the MiG-27K *Flogger-J2* – quickly gained popularity as they entered

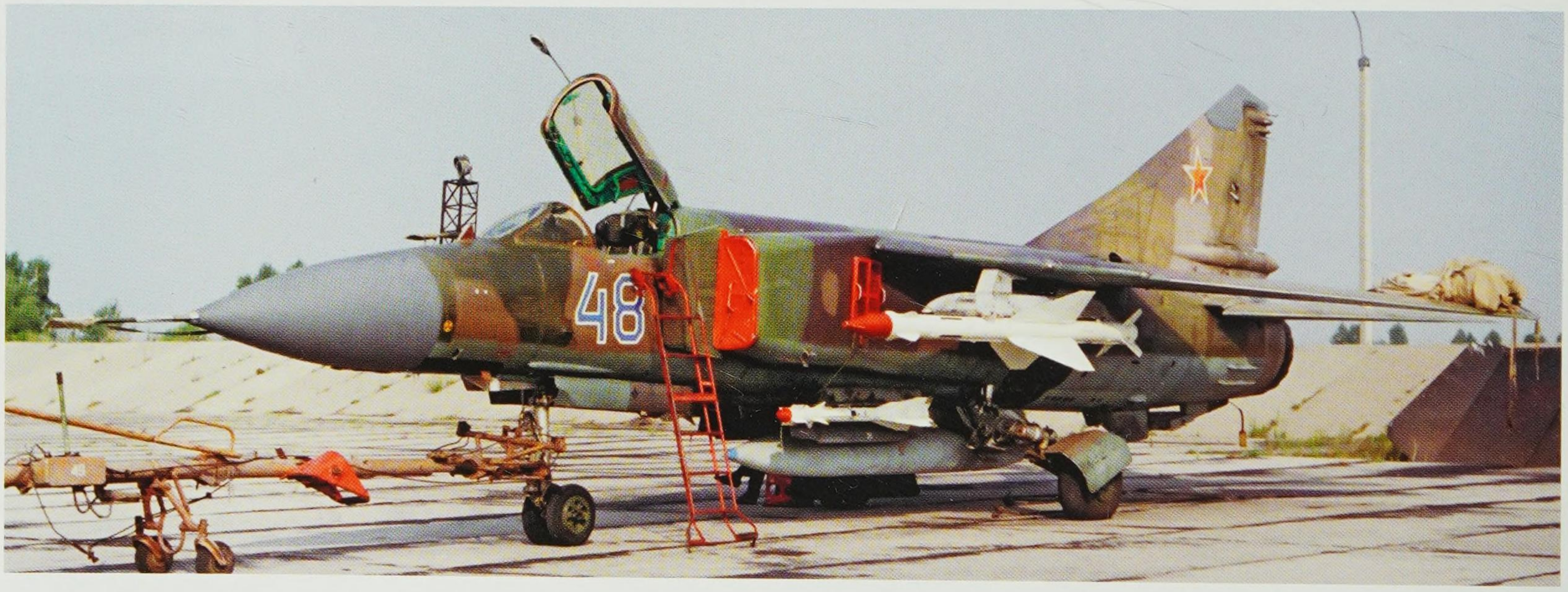
Pilots sprint to two of four MiG-23Ms standing on quick-reaction alert. The fighters are armed with R-60 AAMs.



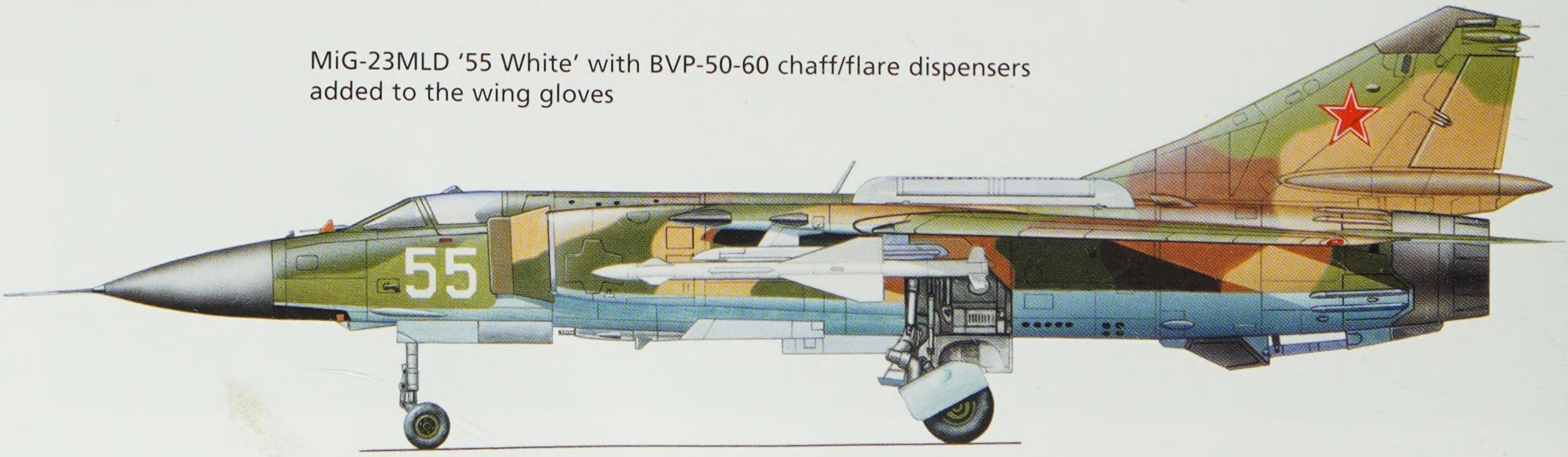


The pilots of a fighter regiment race to their MiG-23Ms in air superiority grey colours during a practice scramble. Note the MiG-23UB trainer in the middle.

'48 Blue', a MiG-23MLD armed with R-24s and R-60s and carrying a drop tank on the centreline.



MiG-23MLD '55 White' with BVP-50-60 chaff/flare dispensers added to the wing gloves



service with the Tactical Aviation. In the late 1980s the MiG-27 family formed the backbone of the fighter-bomber aviation, equipping 22 of the 40 extant fighter-bomber regiments. These units were deployed all over the Soviet Union and in Eastern Europe; for example, the 899th APIB was based in Lielvarde (Latvia), the 224th APIB at Ozyornaya Pad' (Khabarovsk Territory, Far Eastern MD), the 129th APIB in Taldy-Kurgan, the 58th APIB at Step' (Chita Region, Transbakalian MD) and the 18th GvAPIB at Galyonki (Primor'ye Territory, Far Eastern MD).

One more 'swing-wing' fighter-bomber type that had an equally distinguished career with the Soviet Air Force was the Su-17 family. The Air Force started fielding the Su-17 *en masse* in 1970 when the Su-7 was still in production. Again, the first units to equip with the new *Fitter-C* were stationed in the Far East (the 1st Red Banner VA, Far Eastern MD) and in Eastern Siberia where the 23rd VA of the Transbaikalian MD had been established on 23rd July 1967. This time, however, geograph-

A typical propaganda photo of a MiG-23 pilot 'ever ready to defend the skies of his homeland'.

The MiG-23's wings were always folded to 72° maximum sweep when parked to save space on the flight line.

Two MiG-23Ms in air superiority grey colours cruise with the wings at minimum sweep – probably so that the slow camera ship can keep up with them!

Camouflaged MiG-23UB '70 Yellow' is subjected to power-on systems checks; note the sensor cables attached to the pitot/static ports.

Another pair of *Floggers* making a supersonic dash. Each fighter carries four R-13M missiles.

ical proximity to the manufacturer helping to solve initial operational problems was not the only factor. At that time Sino-Soviet relations were at their worst, with an outright armed conflict between the erstwhile allies more than probable; as mentioned earlier, in March 1969 the Soviet Union and China clashed in a border conflict when China attempted to seize the disputed Damanskiy and Kirkinskiy Islands on the Ussuri River. Hence the first Su-17 units

09
07
06
04
01
2

Blue-coded MiG-23MLs on the flight line at a Soviet Air Force base. Note the different types of helmets worn by the pilots.

ЛЕТЧИК
СНАЙПЕР

The badge issued to pilots qualifying for the Sniper Pilot skill grade.

were located close to the Chinese border in order to join the action as quickly as possible, should the need arise.

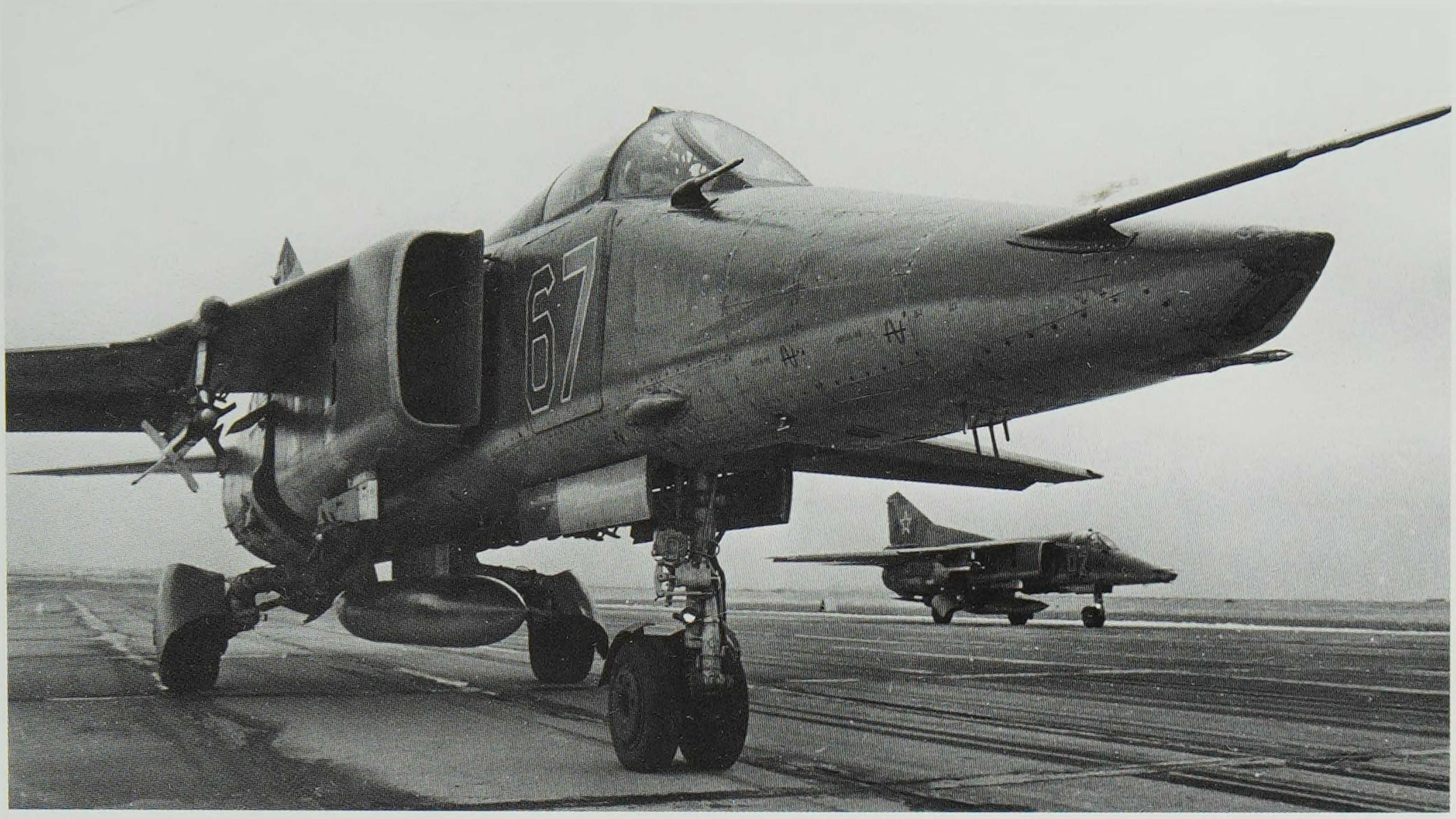
Again, the 523rd IBAP of the 1st VA based at Vozdvizhenka AB led the way, the Su-17 achieving IOC in October 1971. Later, when new versions appeared, other Far Eastern MD units transitioned to the Su-17. These were the 229th APIB at Birofeld AB near Birobidzhan, the 302nd APIB at Pereyaslavka AB, the 26th GvAPIB at an airbase with the rather strange name *De**sya**tyy oo**chas**tok* ('Plot Ten') near Khabarovsk and the 293rd ORAP at Vozzhayevka AB.

In the 23rd VA, the first Su-17 unit (the 43rd *Sevastopol'skiy* Red Banner IBAP awarded the Kutuzov Order) was stationed outside the USSR – namely in Mongolia (see Chapter 6). Incidentally, this Air Army contained a larger-than-usual proportion of strike units. Four other Transbaikalian MD Su-17 units were based around Chita; these were the 58th APIB at Step'-Olovyannaya AB, the 189th GvAPIB and 101st ORAP at Borzya (Chindant AB), and the 125th ORAP at Domna AB. The latter reconnaissance regiment operated a mix of Su-17M3R *Fitter-Hs* and Su-24MR *Fencer-Es*.

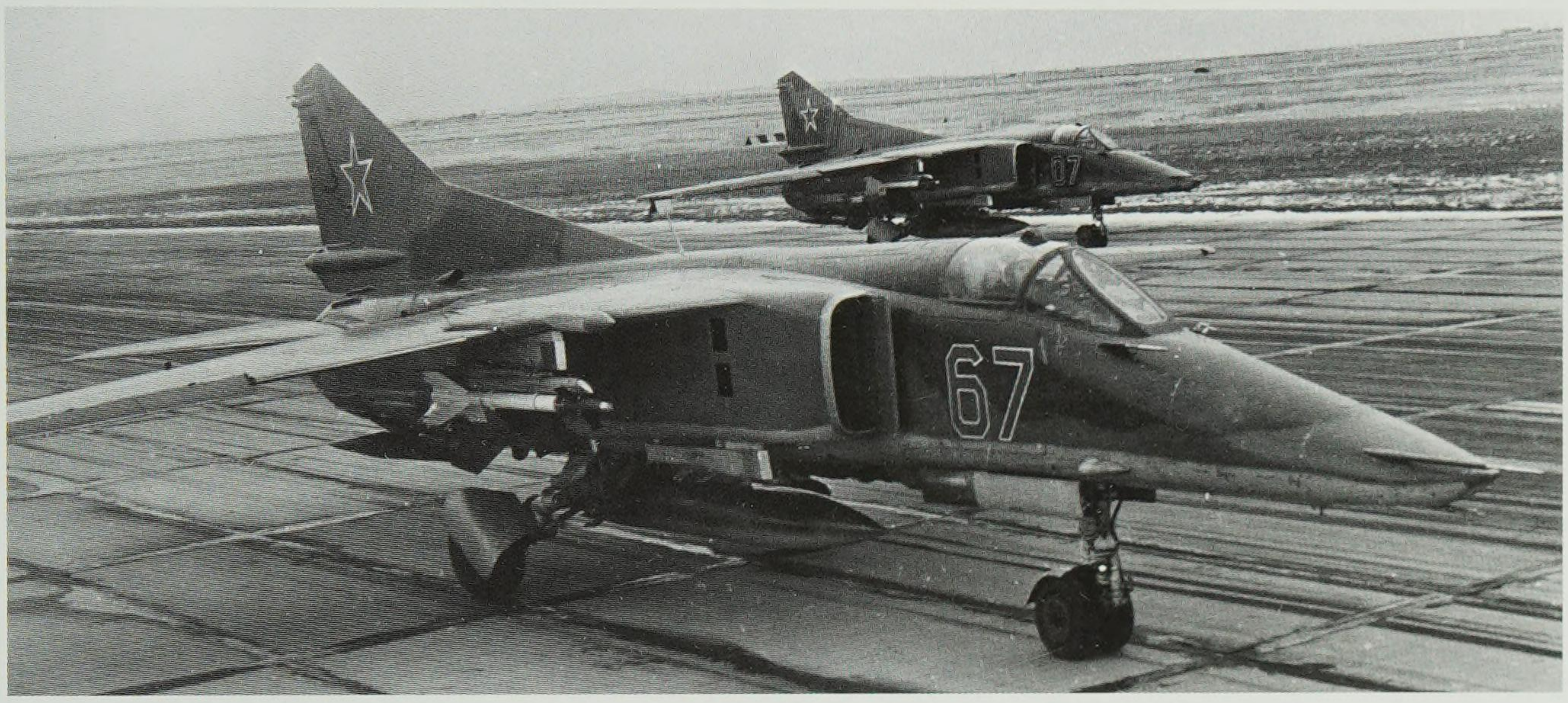
In the Turkestan MD there were two Su-17 units: the 136th APIB in Chirchik near Tashkent, Uzbekistan, and the 156th APIB in

The day's flying completed, two MiG-23B pilots head for the debriefing room.

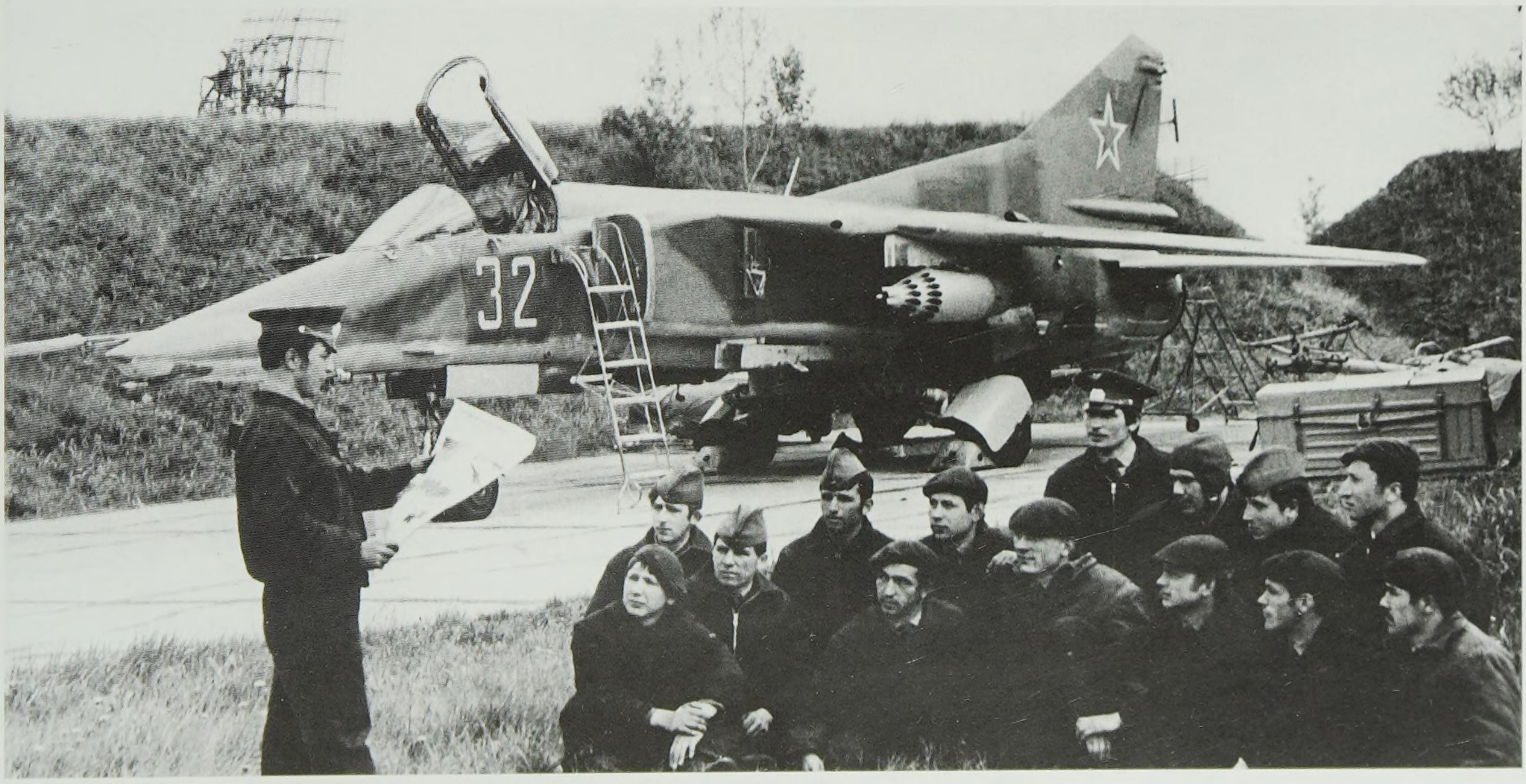
A Soviet Air Force MiG-23B is seen immediately before touchdown.



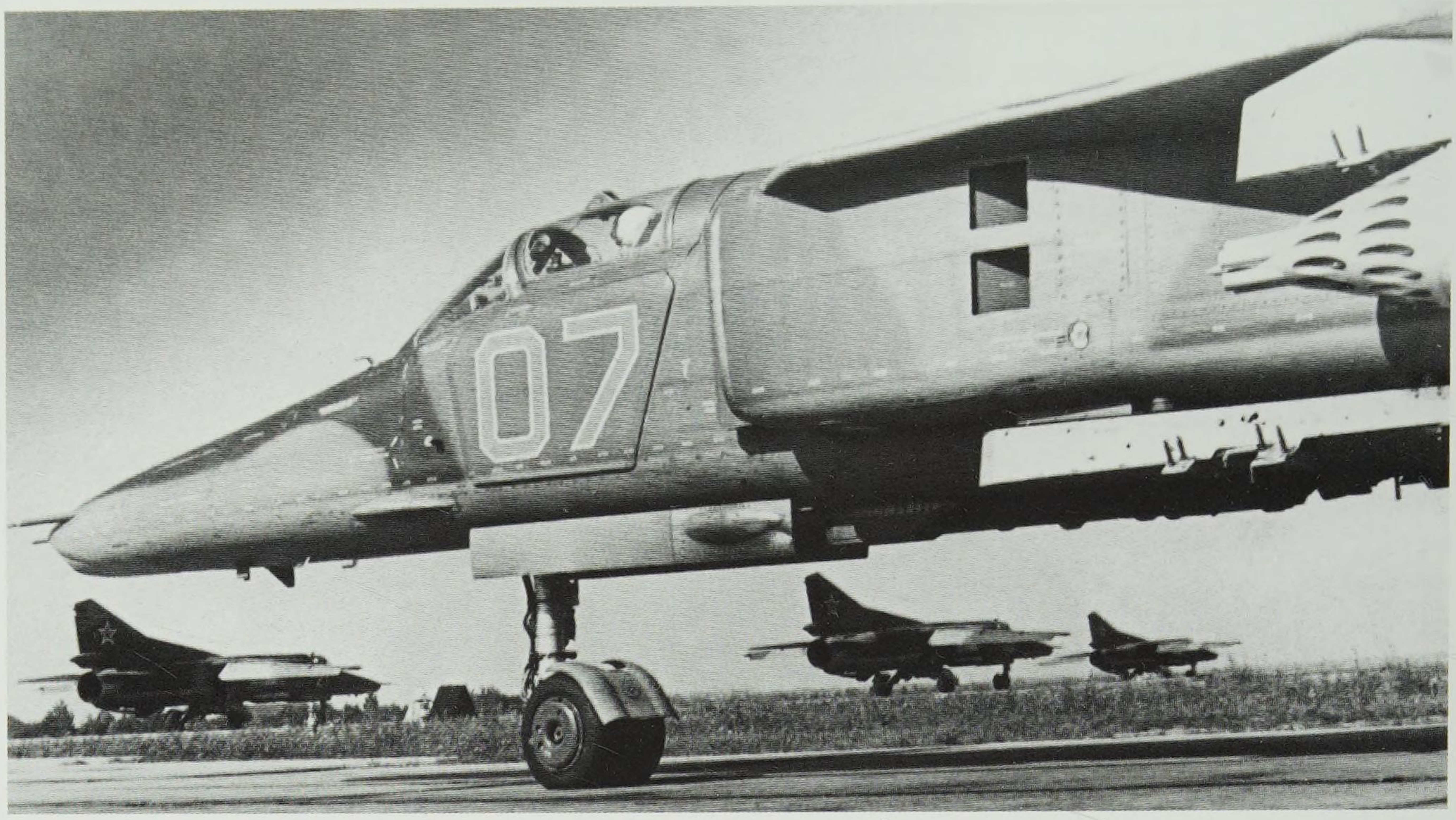
A pair of MiG-27s armed with R-13M AAMs line up for a formation take-off.



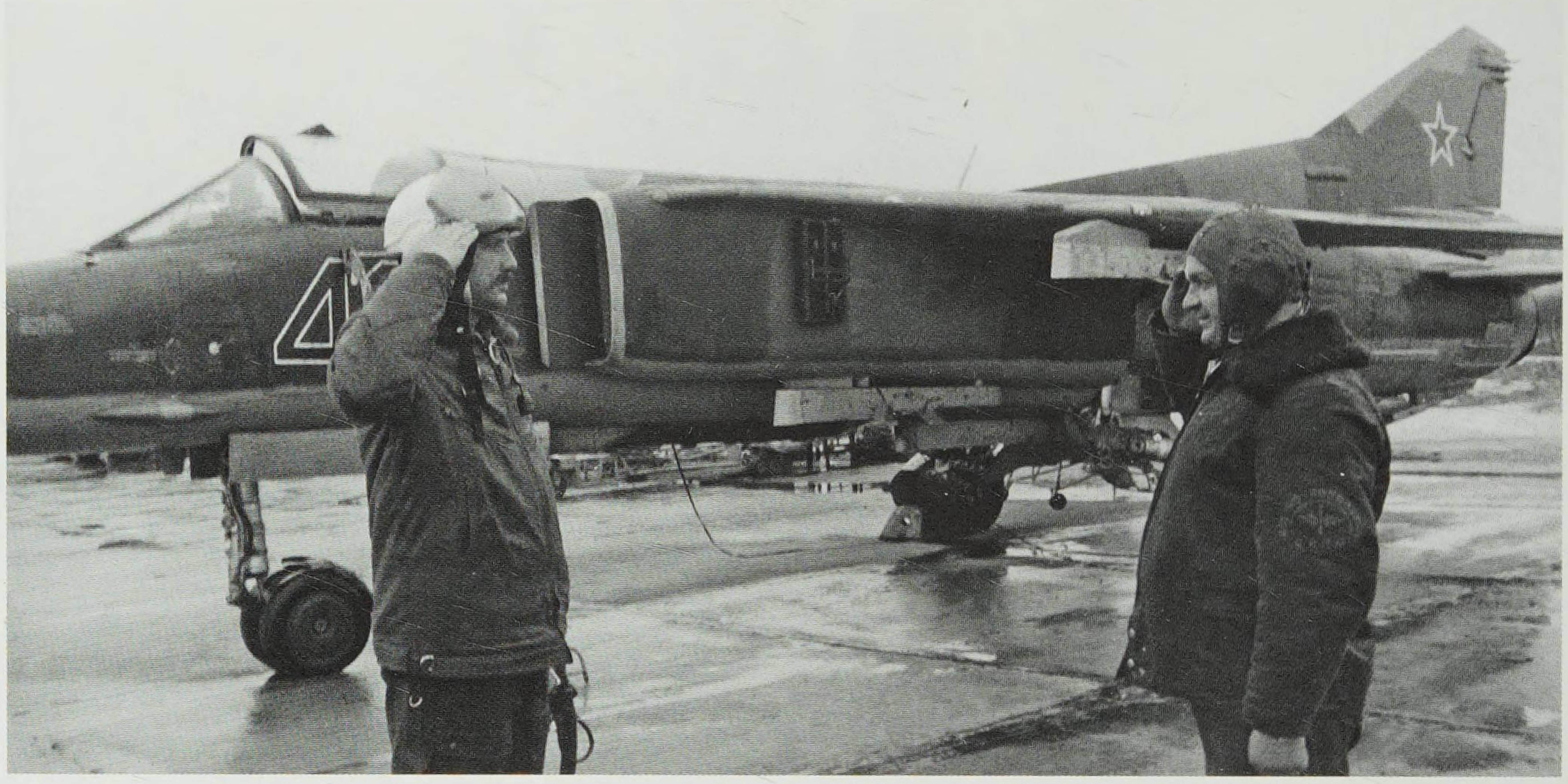
A MiG-27 unit's political officer gives the 'black men' an improvised lecture on current events directly at the dispersal.



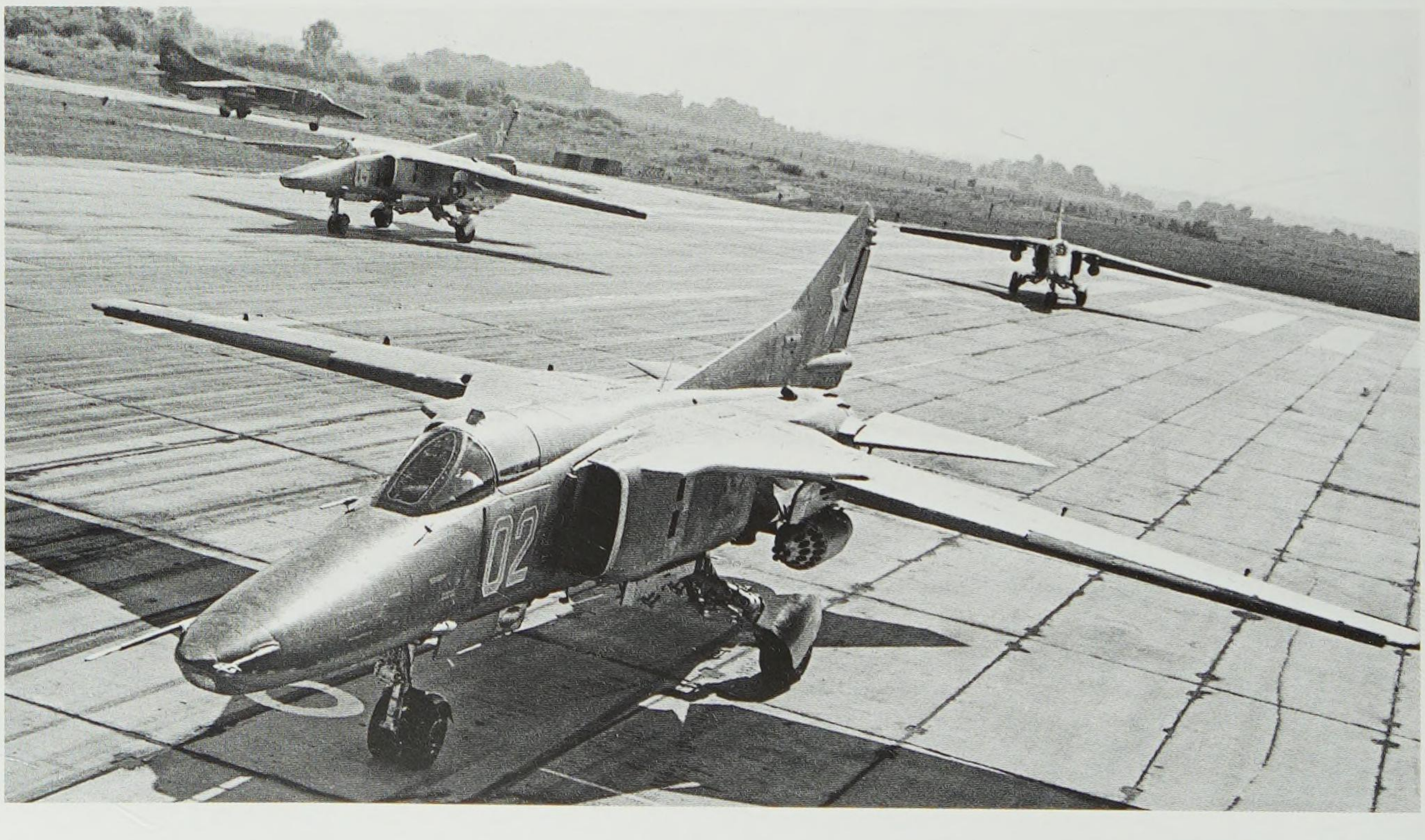
MiG-27M '07' waits its turn to take off, with three sister ships already on the runway Note the extra armour scabbed onto the cockpit sidewalls.

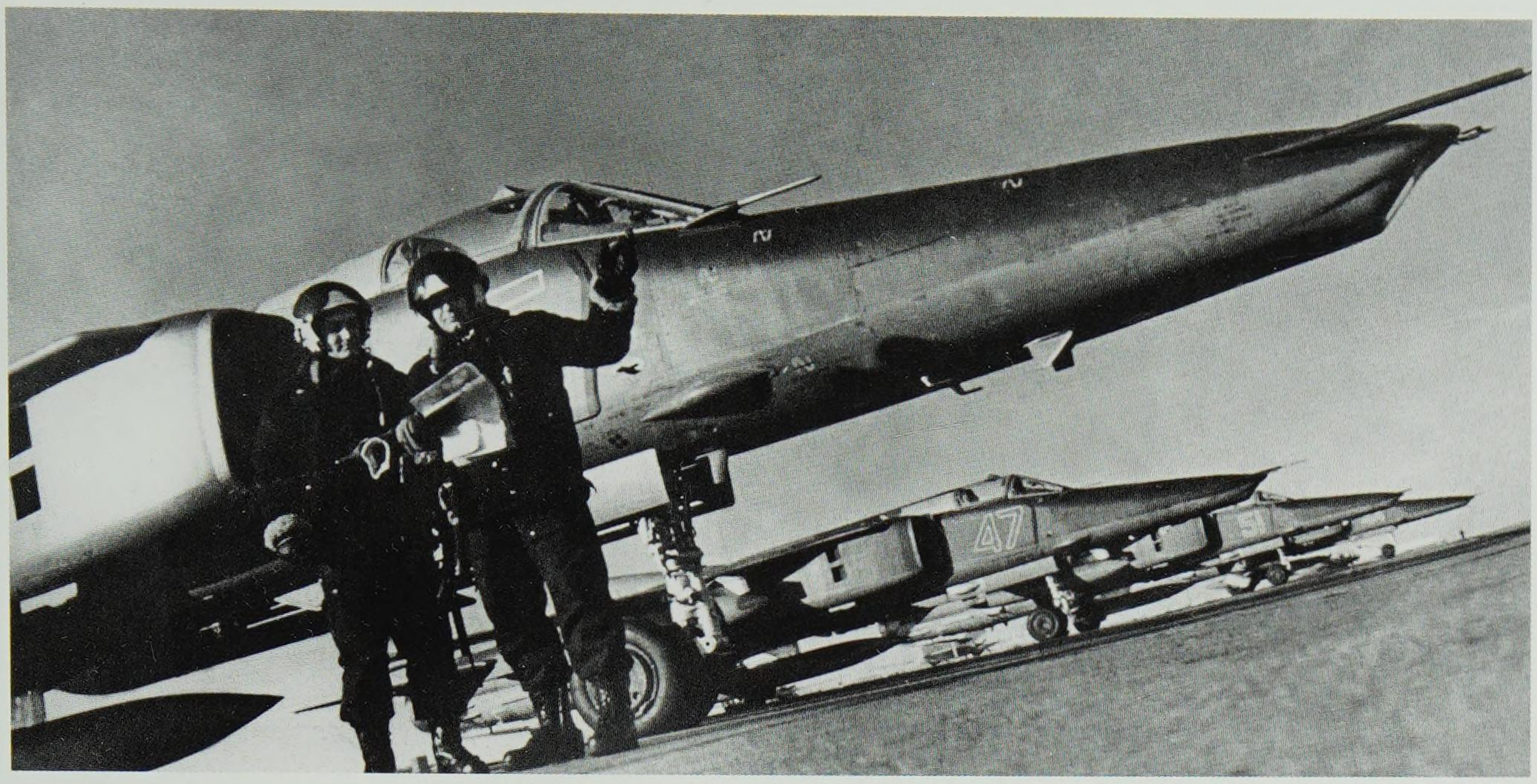


The crew chief reports to a MiG-27M pilot that his mount is ready for action.

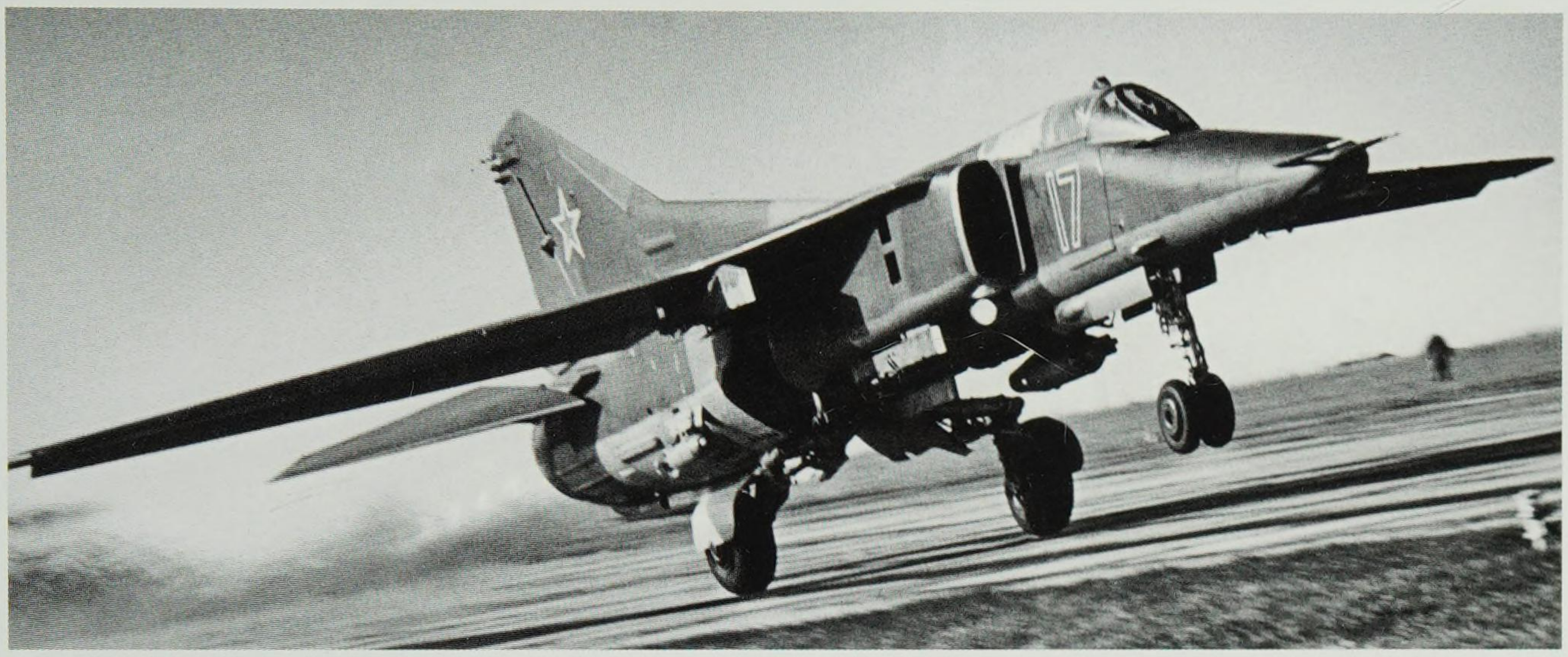


Three MiG-27Ms carrying UB-32A FFAR pods on the wing pylons line up for a formation take-off during an exercise while a fourth aircraft (probably '07 Red' shown in the upper picture) awaits its turn.



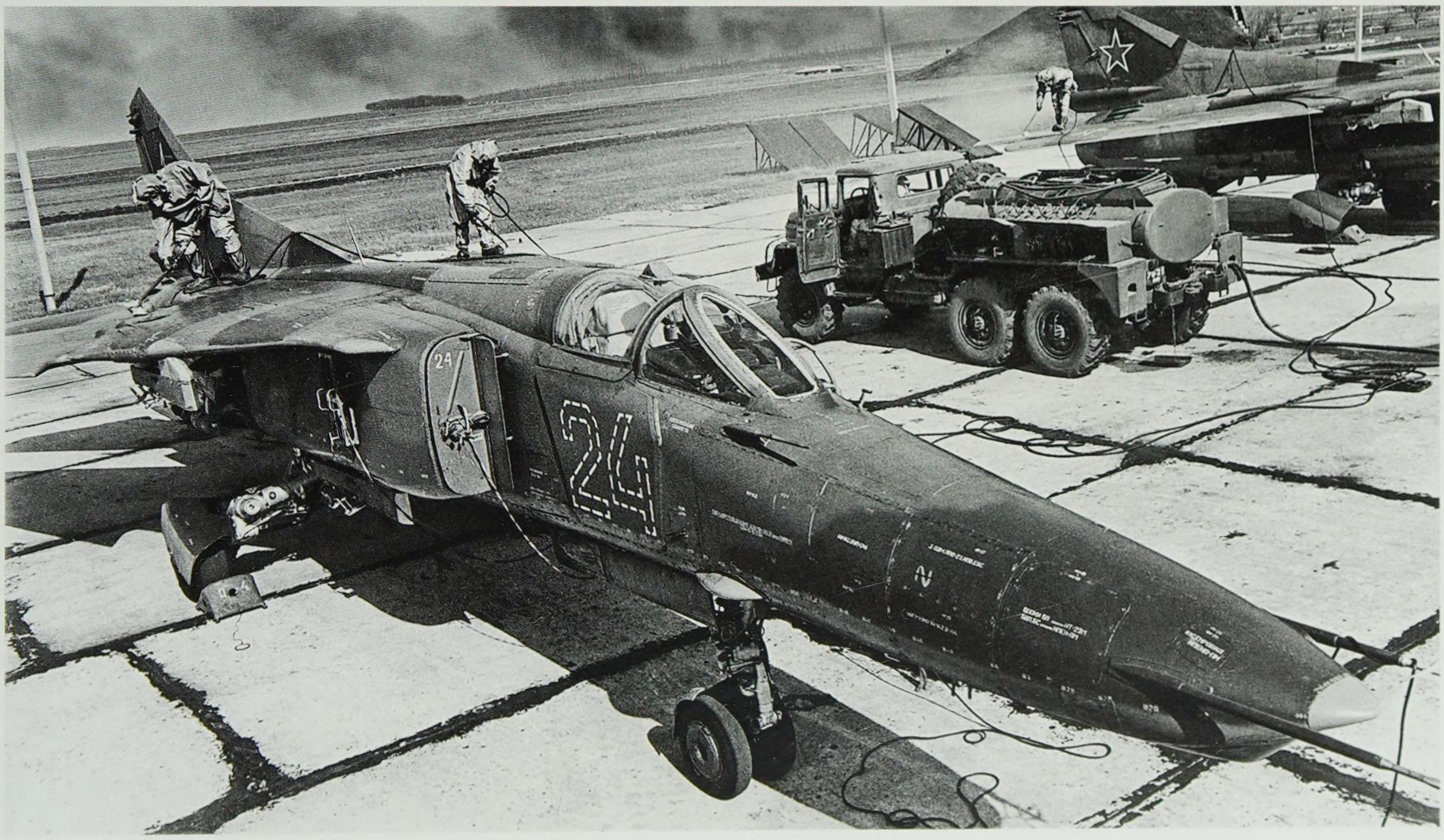


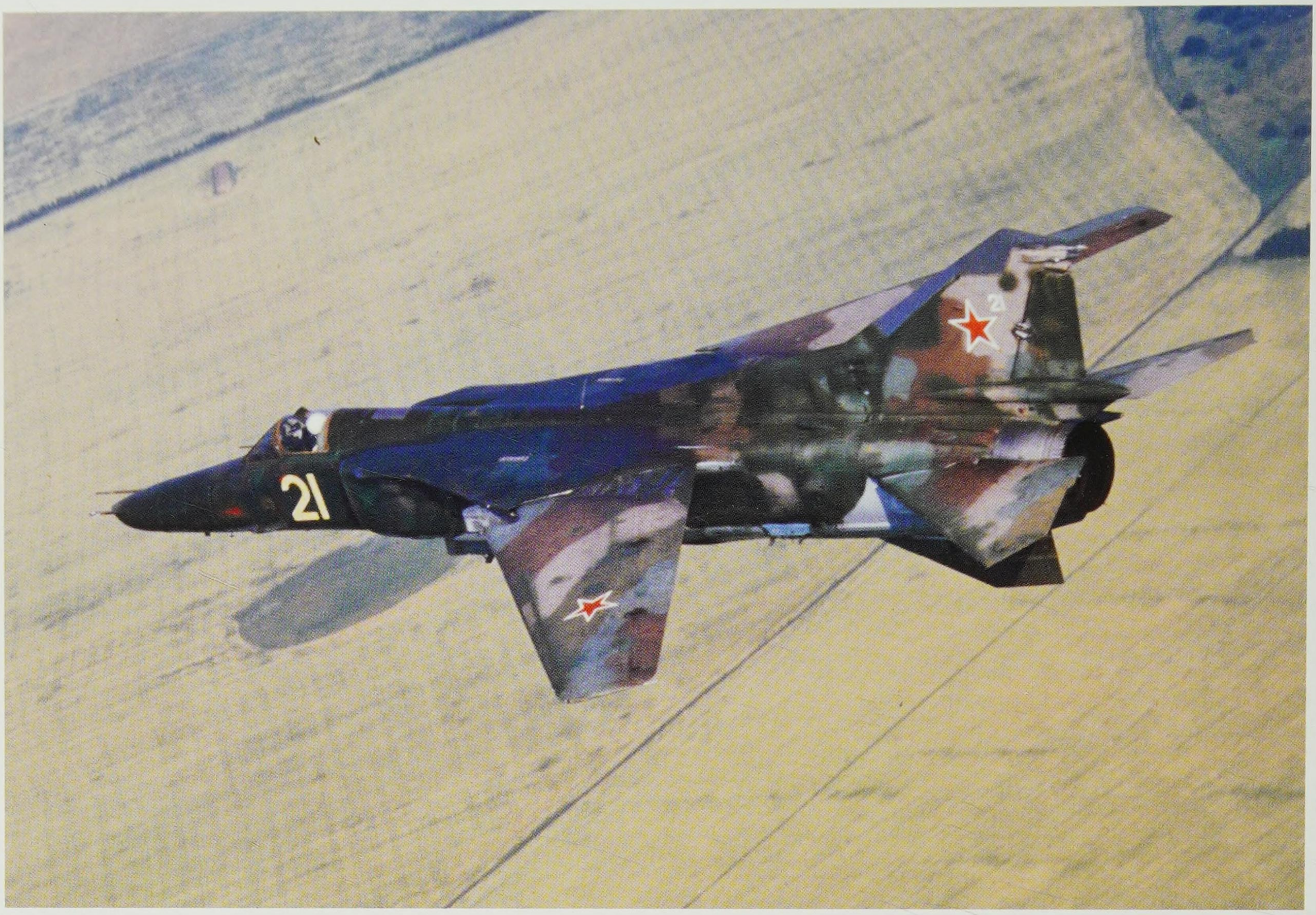
An identification feature of the MiG-27M/MiG-27D was the strake-like extensions of the wing gloves on the air intake trunks.



Seen at the moment of rotation, MiG-27M '17 Blue' carries only a single UB-16-57 FFAR pod.

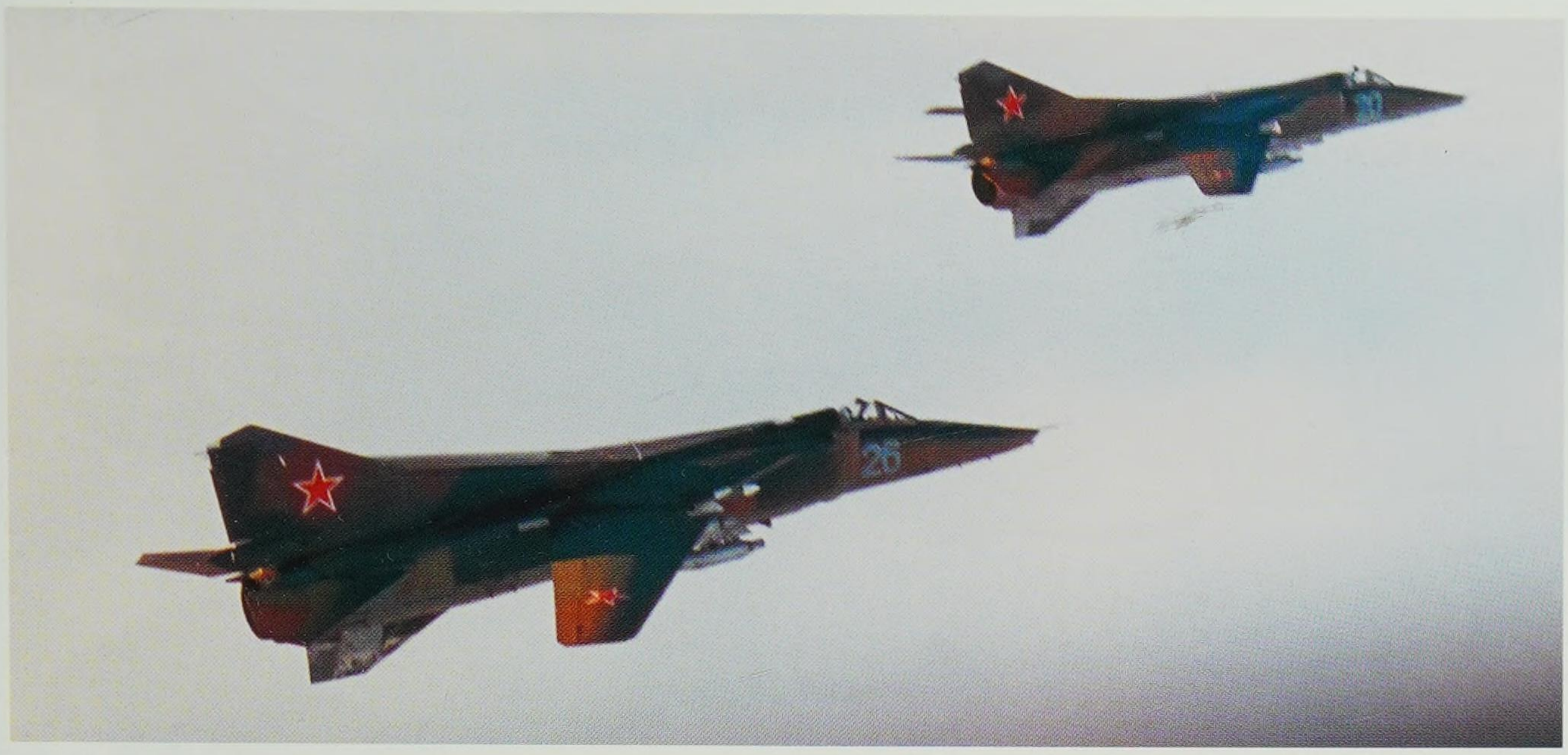
'Elephants' in NBC protection suits use an ARS-14 decontamination vehicle to scrub down a pair of MiG-27Ms during an exercise.



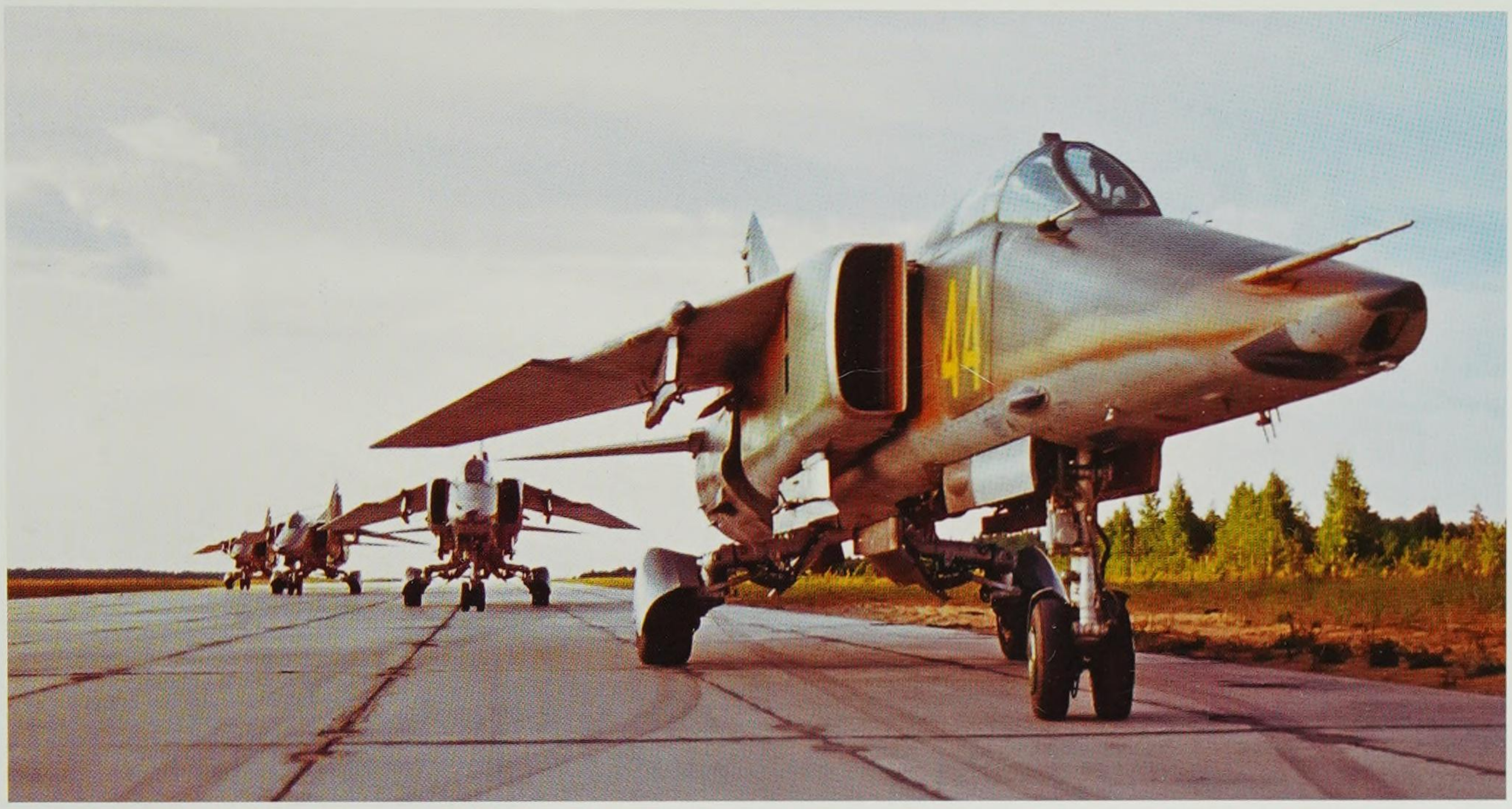


This MiG-27D is a rather strange sight, as the camouflage scheme changes perceptibly from nose to tail. Apparently the tech staff ran out of paint before they could finish the job!

Silhouetted against the setting sun, a MiG-27M makes a gentle turn high above the clouds.

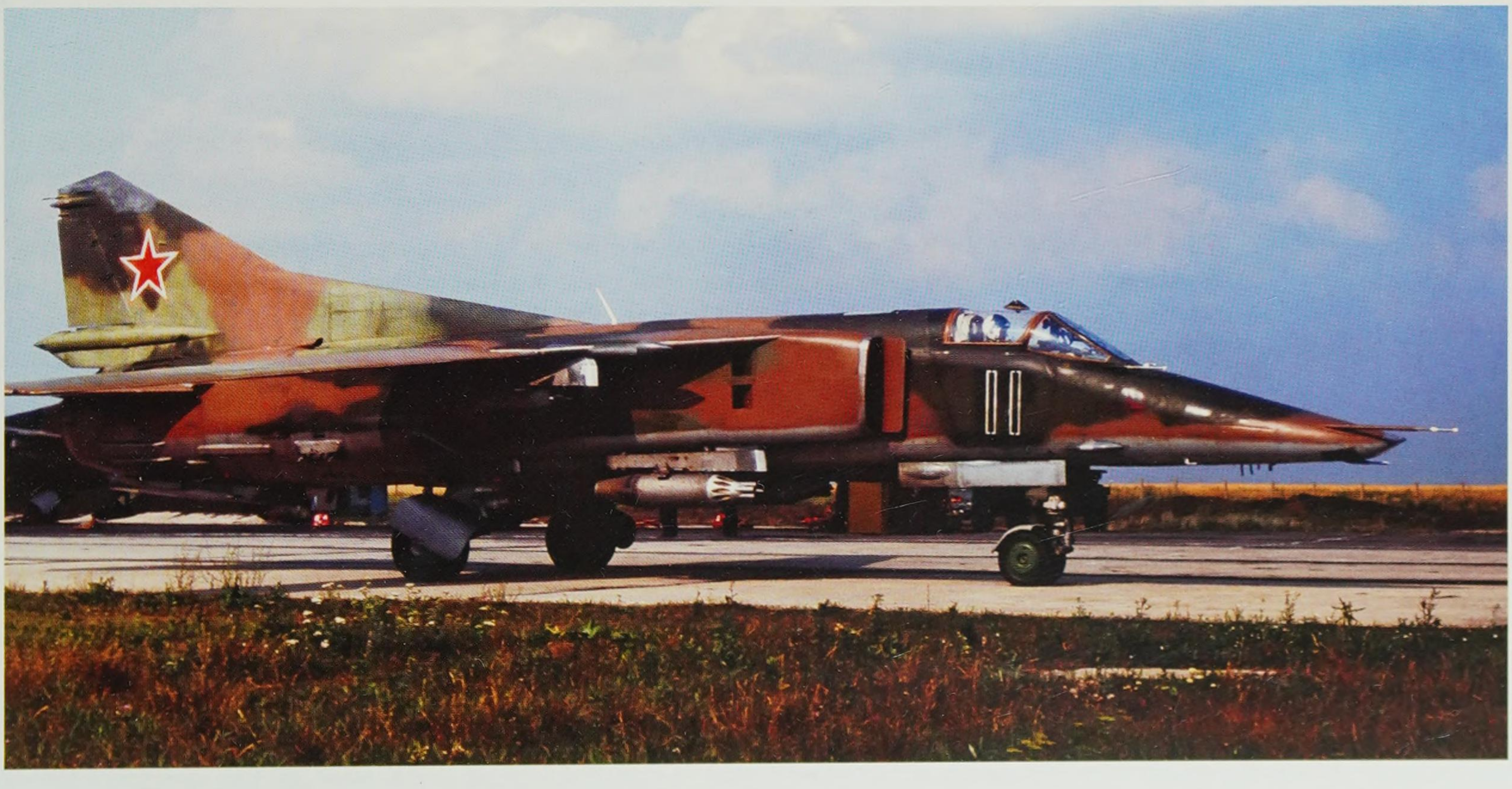


A pair of blue-coded MiG-27s with FFAR pods cruise over thick overcast en route to a target range.

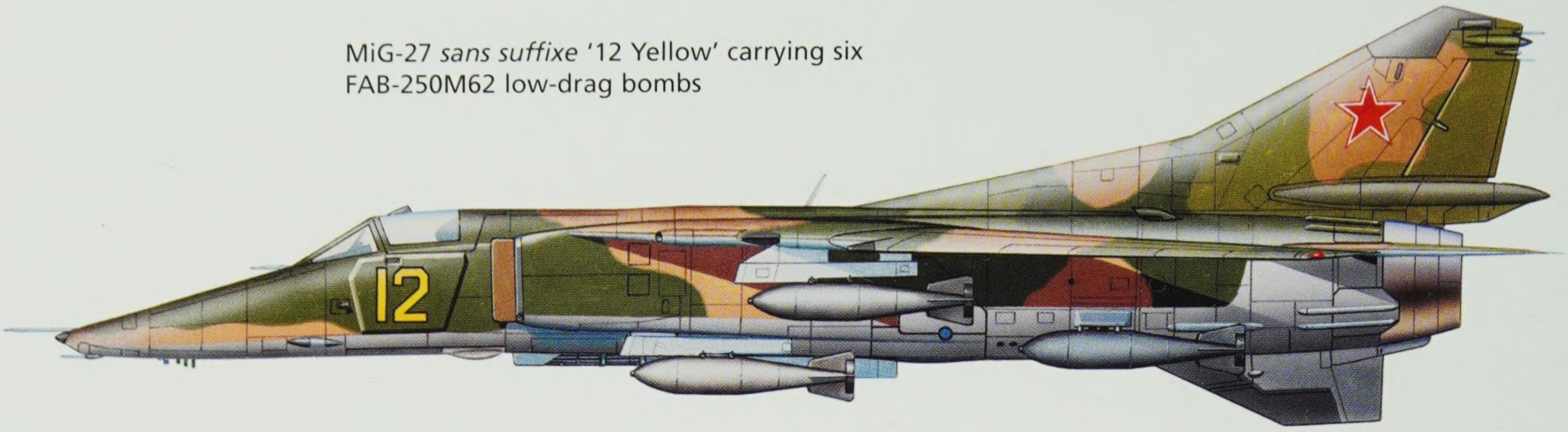


Yellow-coded MiG-27s *sans suffixe* parked on a taxiway for a publicity photo.

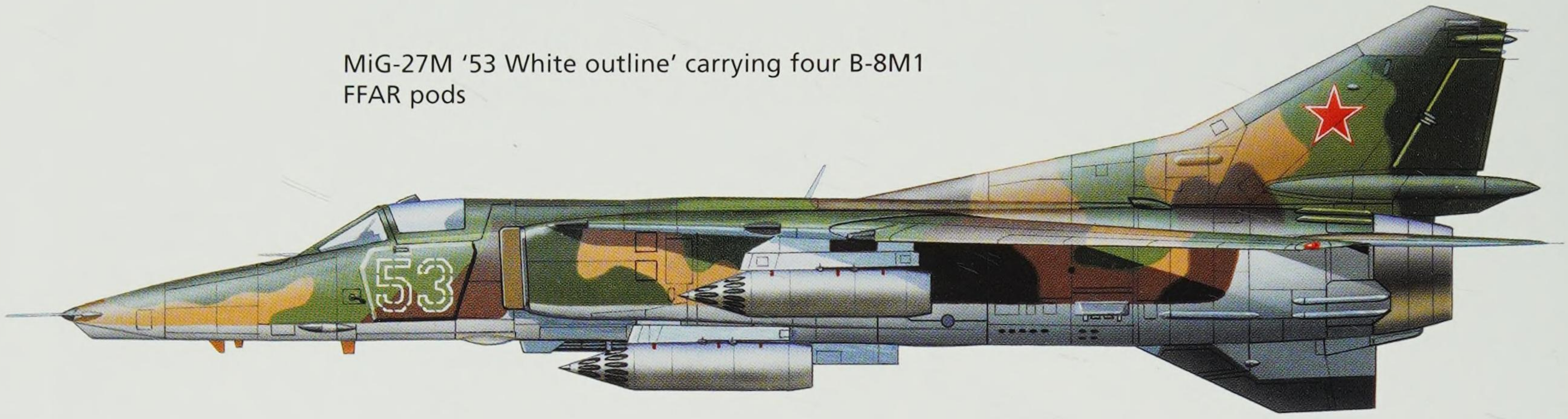
MiG-27 *sans suffixe* '11 White outline' shows considerable weathering on the rear end – probably because the nose had been under wraps but the tail had not.



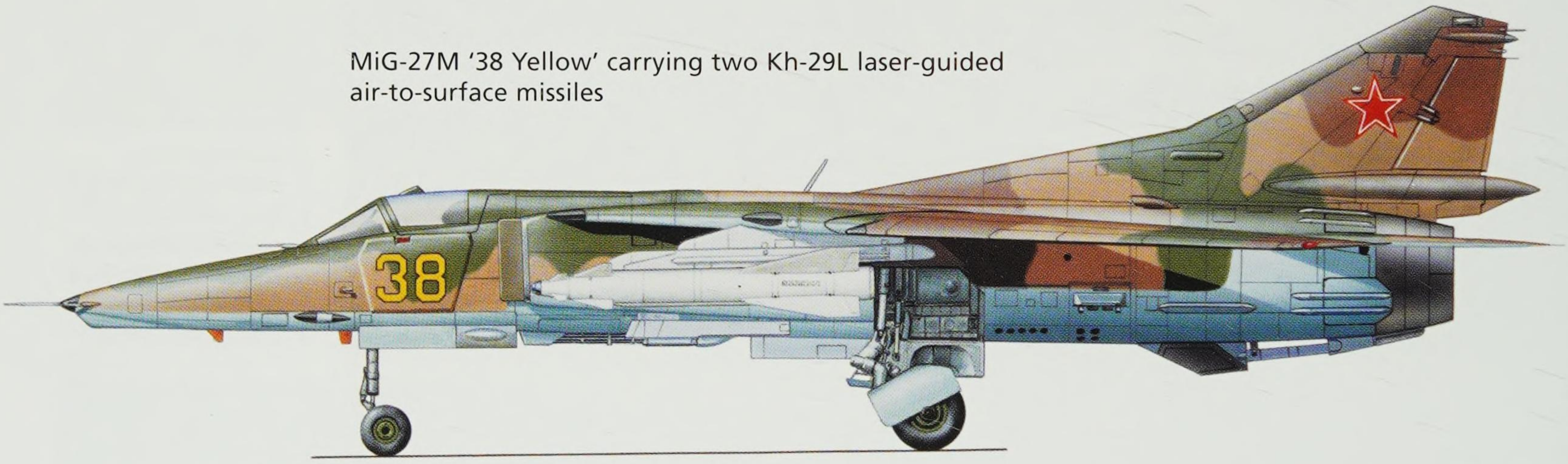
MiG-27 *sans suffixe* '12 Yellow' carrying six FAB-250M62 low-drag bombs



MiG-27M '53 White outline' carrying four B-8M1 FFAR pods



MiG-27M '38 Yellow' carrying two Kh-29L laser-guided air-to-surface missiles



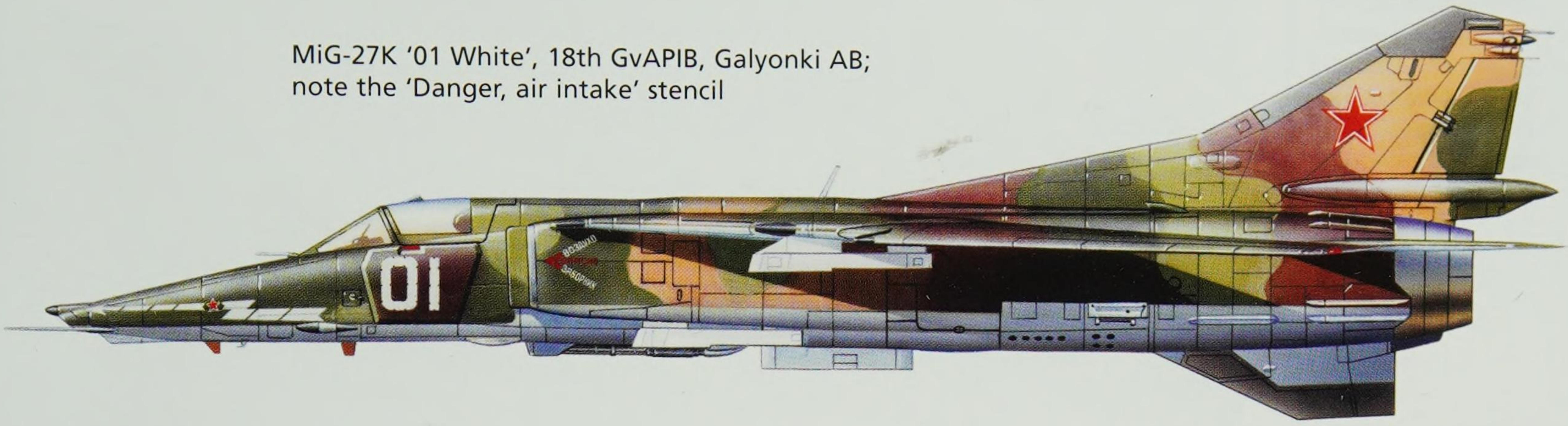
at Maryy-2 AB, Turkmenia. In the Central Asian MD the Su-17 saw service with the 217th IBAP in Kzyl-Arvat (Turkmenia, 49th VA, Su-17 *sans suffixe*), the 87th ORAP at Karshi (Kashkadar'ya Region, Uzbekistan) and the 317th ORAP at Chimkent (now Shymkent, southern Kazakhstan).

In the Transcaucasian MD there were five Su-17 units – again stationed in two different republics. The 34th IBAP at Nasosnaya AB near Kirovabad (now called Gyandzha) and the 976th APIB at Kyurdamir were based in Azerbaijan; the former regiment operating Su-17s *sans suffixe* later became an operational conversion unit. The other three units – the 187th APIB at Shiraki AB (aka Marneuli), the 841st GvAPIB at Meria and the 313th ORAP at Vaziani – were based in Georgia. Some sources also mention the 166th APIB at Marneuli as a Su-17 operator.

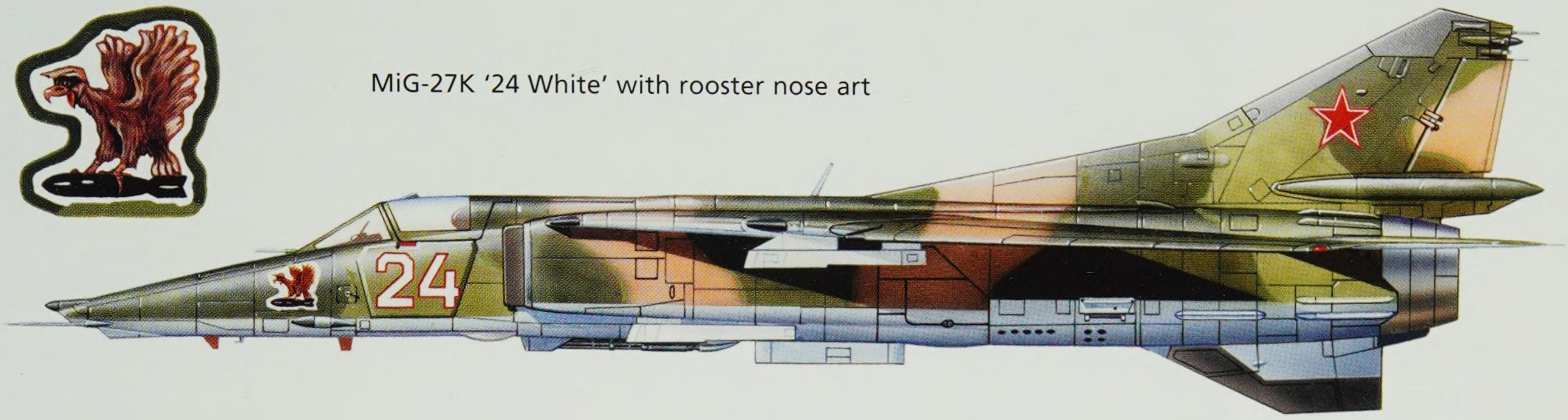
In the North Caucasian MD the *Fitter* was limited to three training regiments assigned to the Air Force's pilot colleges – the 802nd UAP (*oo*___cheb___*nyy* ___a___*via*___polk___ – training air regiment) in Krasnodar, the 959th UAP in Yeisk and the 963rd UAP in Taganrog.

In the Ukraine, the 14th VA of the Carpathian MD had three units that converted to the Su-17 from the Su-7B. These were the 69th IBAP at Ovruch (Zhitomir Region), the 314th APIB at Cherlyany (L'vov Region) and the 806th IBAP at Lutsk (Volyn' Region). The 806th subsequently converted to the Su-24 bomber, becoming the 806th BAP and being subordinated to the 289th BAD. There was also a reconnaissance unit, the 48th GvORAP

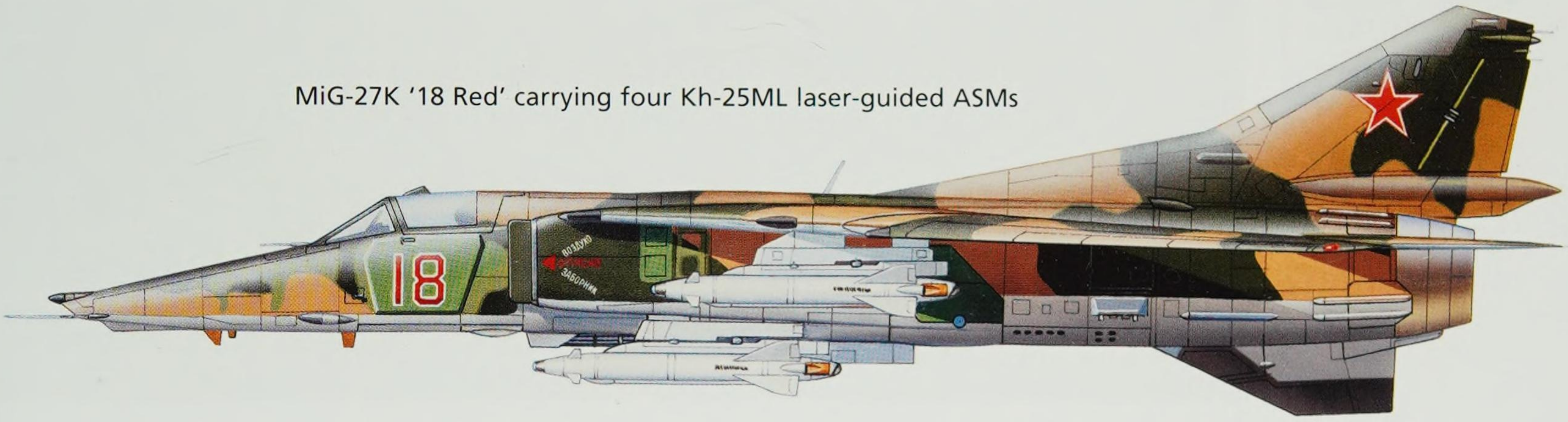
MiG-27K '01 White', 18th GvAPIB, Galyonki AB; note the 'Danger, air intake' stencil



MiG-27K '24 White' with rooster nose art



MiG-27K '18 Red' carrying four Kh-25ML laser-guided ASMs

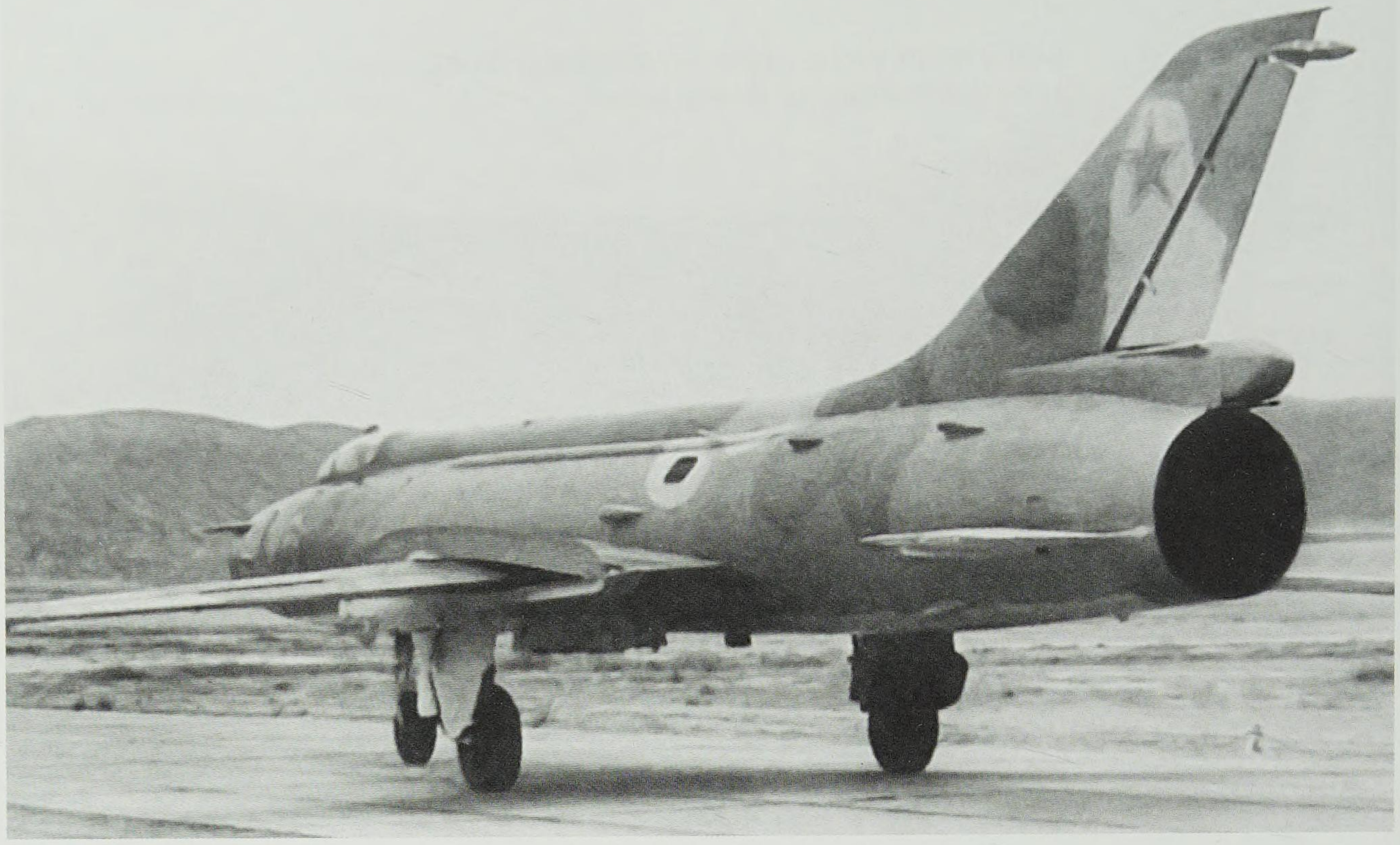


at Kolomyya, Ivano-Frankovsk Region. Next door, in the Odessa MD, the Su-17 saw service with the 827th ORAP at Limanskoye airport in the Odessa Region, which had a military area, and one more training unit – the 29th UAP in Berdyansk, Zaporozhye Region.

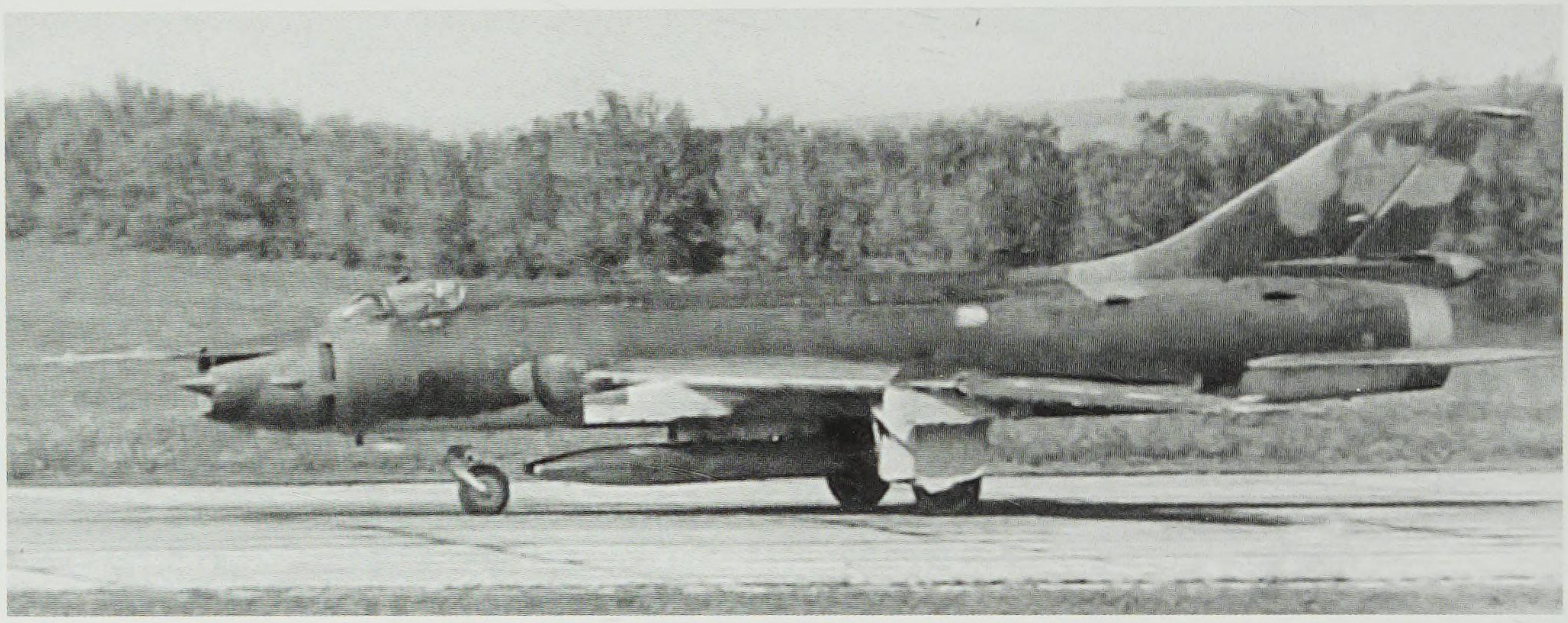
In the Belorussian MD, three units – the 306th APIB and 953rd APIB at Bobrovichi AB and the 940th APIB at Postavy AB – converted to the Su-17 from the Su-7. The Baltic MD had a single unit – the 15th VA's 886th ORAP at Yekabpils, Latvia. In the nearby Leningrad MD there were two Su-17 units – the 67th APIB at Seeverskaya AB (Leningrad Region) and the 98th GvORAP at Monchegorsk (Murmansk Region). Finally, in the Moscow MD the type served with the 274th APIB in Kalinin.

In peacetime the Soviet Su-17s often took part in domestic or joint (Warsaw Pact) exercises. For example, the type was heavily involved in Exercise *Dnepr-79* held in the Belorussian MD; flights of four Su-17s in close formation would even pass over Minsk, causing consternation among the local residents (Machoolishchi AB where the fighter-bombers were based for the duration is on the southern outskirts of the city). On 1st-9th August 1985 Su-17M4s and MiG-27s saw a lot of action during a tactical exercise, operating from Lebyazhye AB in the Volgograd Region.

During exercises the Su-17s often redeployed to forward operating locations. These were not dirt strips; in the mid-1970s operations from field airstrips were no longer so strongly on the agenda – for several reasons. Experience with the Su-7BKL had shown that the wheel/skid landing gear of was of little use – the aircraft tended to sink into the mud all the same; the problem would surely be even more acute with the heavier Su-17, which had ordi-



Three-tone camouflage was applied to the Su-17s on site. There was no standard camouflage scheme.

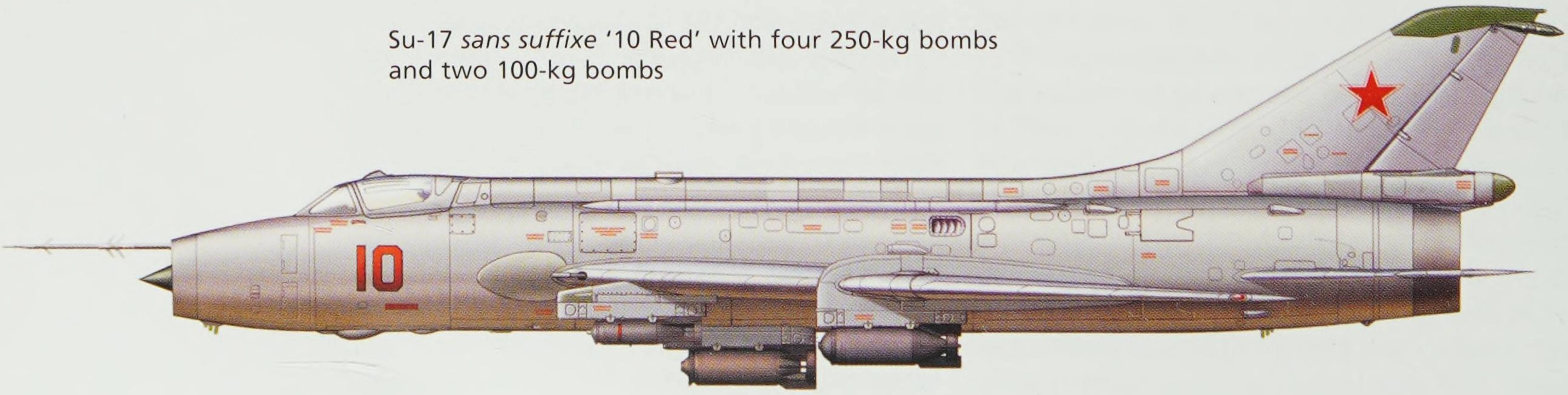


A camouflaged Su-17 *sans suffixe* taxies out with two PTB-800 drop tanks under the fuselage.

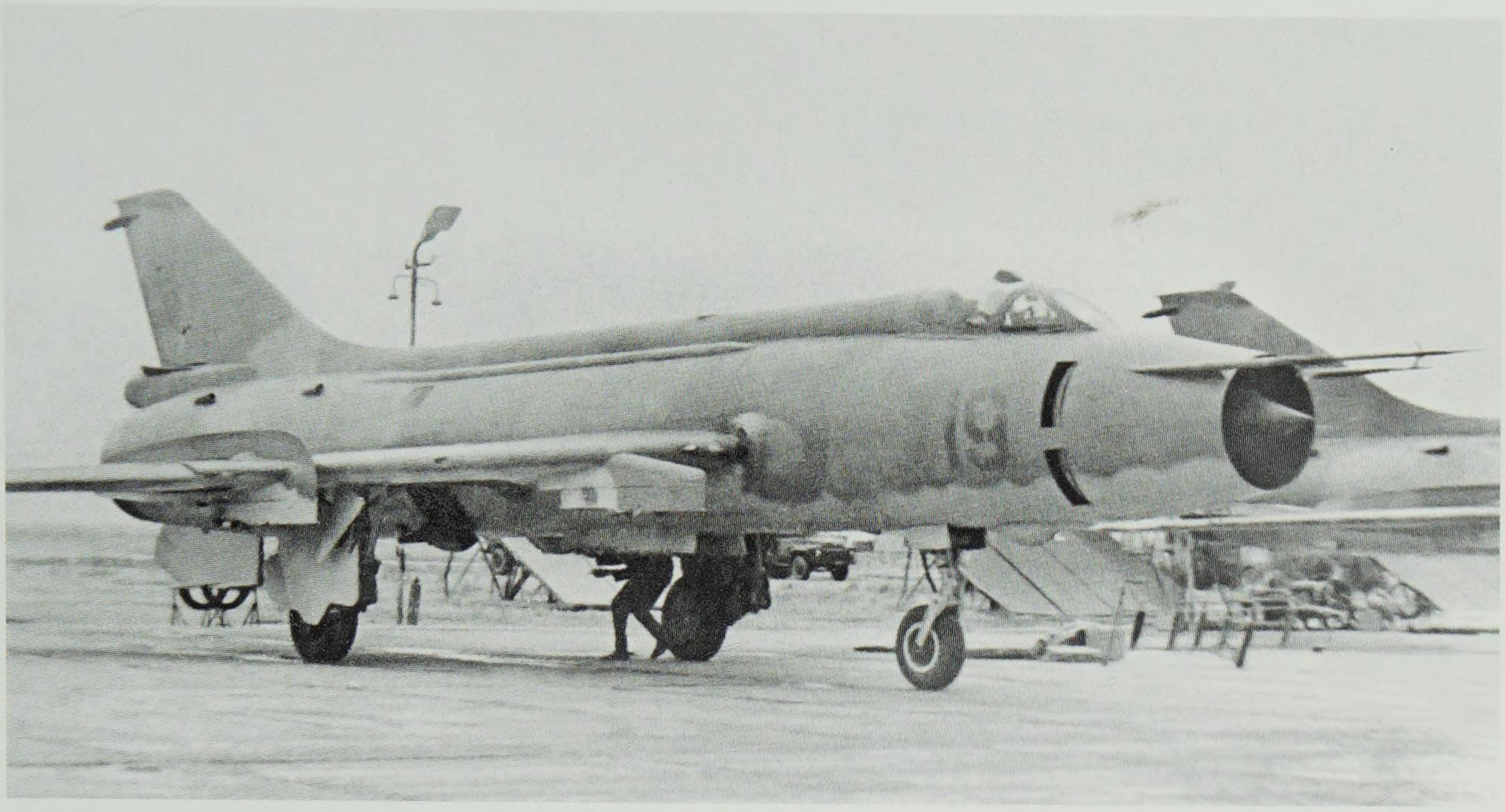
nary main gear units into the bargain. Also, the AL-21F-3 engine was very vulnerable to FOD, which made operations from unpaved airstrips all but impossible. Another factor was that maintenance of such aircraft in the field (off base) was quite complicated.

Instead, highway strips were used. Often these were sections of motorway passing next to airbases and connected to them by long taxiways.

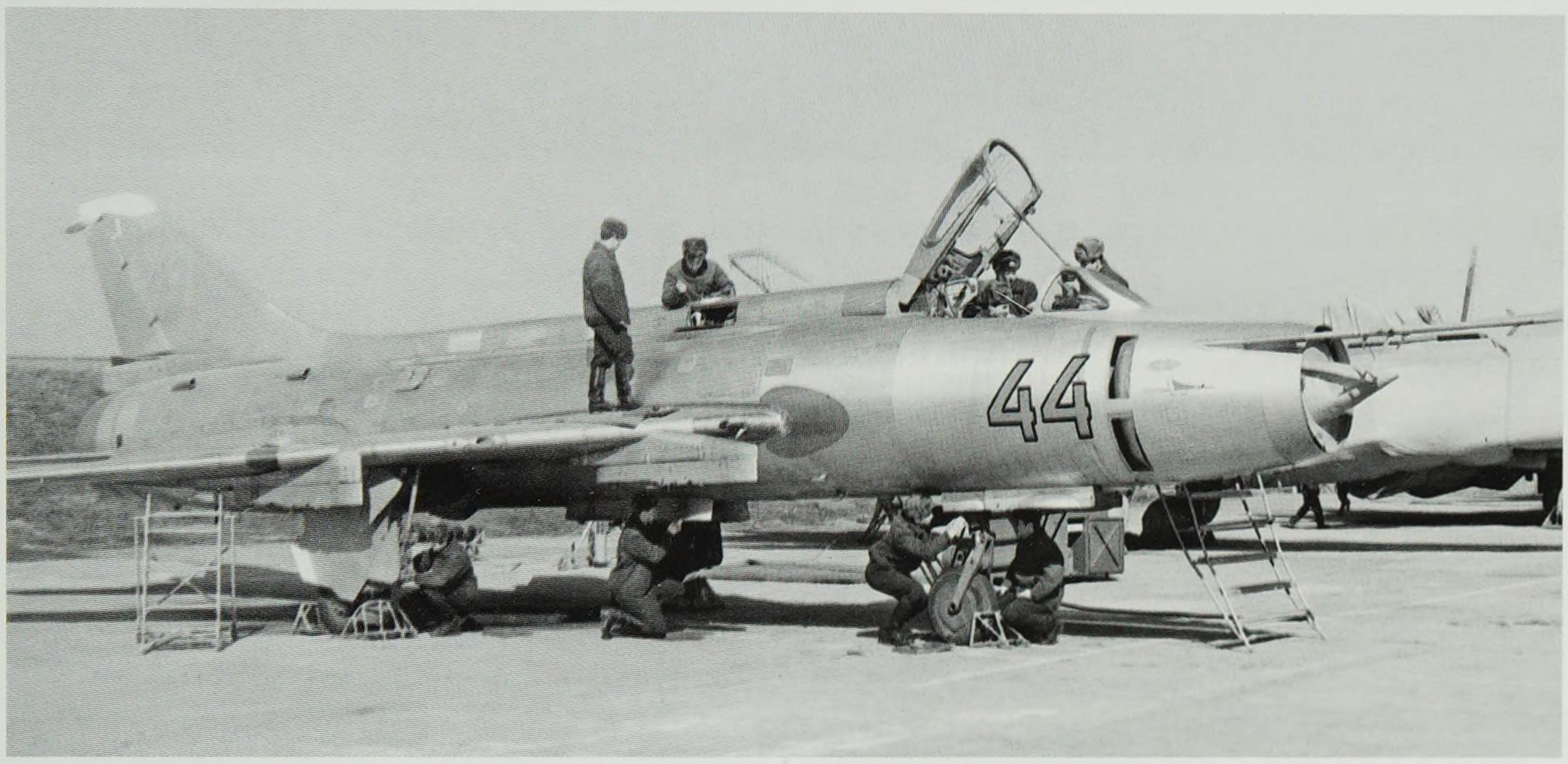
Now we come to tactical bombers. In the 1970s the Yak-28 family, which had replaced the IL-28, was itself superseded by a modern type – the Su-24 *Fencer*. Again, it featured VG wings for better field performance; the Su-24 had a crew of two and a sophisticated naviga-



Su-17 *sans suffixe* '10 Red' with four 250-kg bombs and two 100-kg bombs



'19 Red', another camouflaged *Fitter-C*, about to leave the flight line. The tactical code is not outlined and blends with the background.

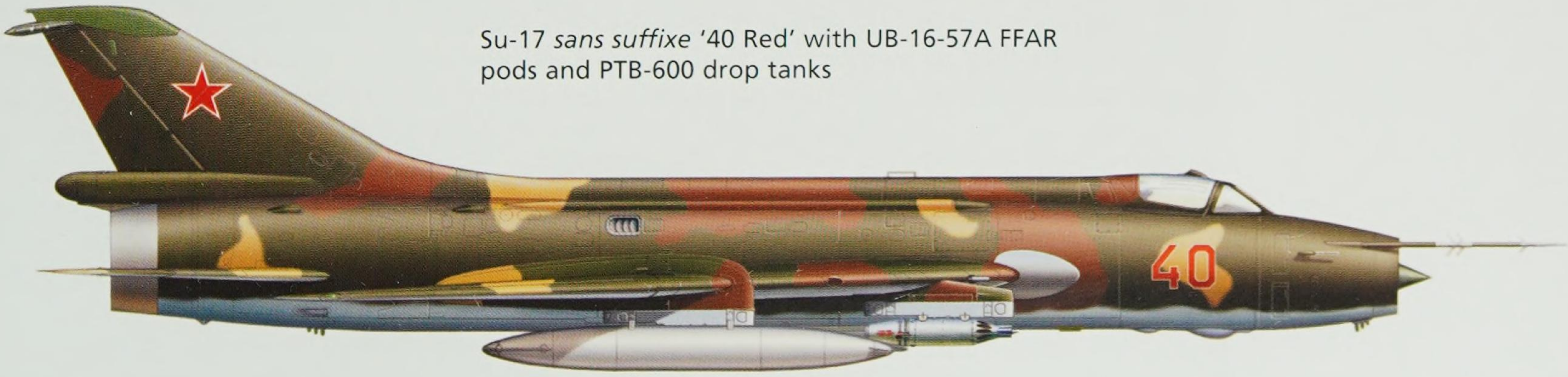


Maintenance in progress on Su-17 *sans suffixe* '44 Red'. The aircraft has two wing fences but the back-up pitot has been moved to the port side; note the 'Excellent aircraft' badge below the metal plate blanking off its former location.

tion/attack suite enabling nap-of-the-earth flying during air defence penetration.

It comes as no surprise that the Su-24 with so many new systems took time to be prepared for the line regiments. state acceptance tests commencing in 1970 were not finally completed until the beginning of 1975 and the USSR's Council of Ministers formally cleared the type for service with the Air Force on 4th February 1975. As usual, initial deliveries were made to the 4th TsBP i PLS at Lipetsk to familiarise instructor pilots and develop new tactics to exploit the warplane's qualities to the full.

Some aircraft went to the 760th BAP at Voronezh-Baltimor AB, a detached part of the



Su-17 *sans suffixe* '40 Red' with UB-16-57A FFAR pods and PTB-600 drop tanks

Operational Su-17Ms in natural metal finish on the flight line. The third aircraft appears to carry an 'Excellent aircraft' badge.

4th TsBP i PLS used for training personnel and testing bombers. (Today, this base hosts a first-line Su-24 unit.) Much later, in June 1981, the first deliveries of the Su-24M *Fencer-F* were made to active regiments in the Soviet Air Force.

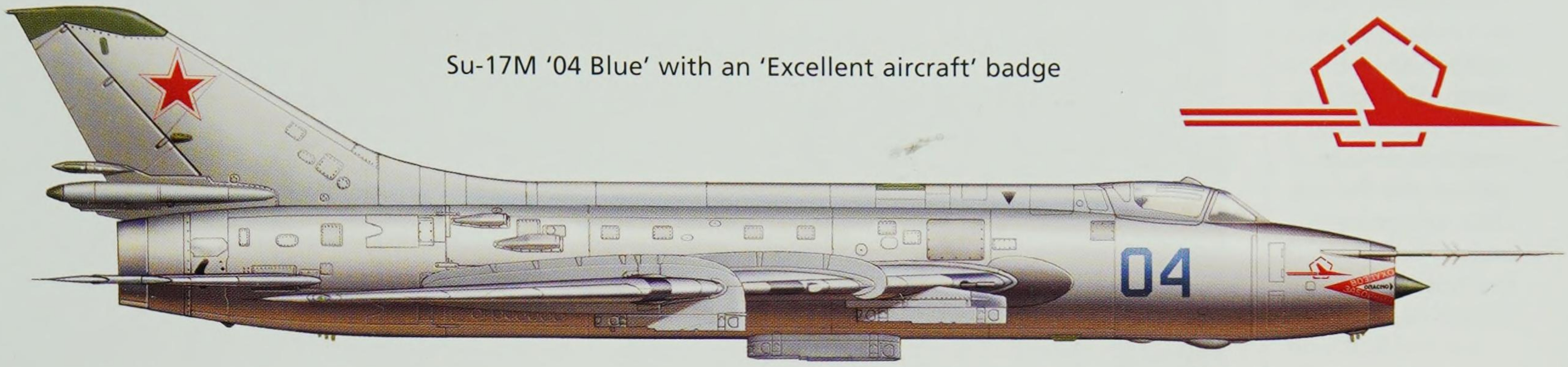
As the Sukhoi OKB had had the foresight to fit dual controls, familiarisation and training were facilitated and, as a bonus, a dedicated training version became superfluous, saving in both time and money. The installation of dual controls was to act mainly as a safety measure, allowing the weapons systems operator (WSO) to bring the aircraft home, should the pilot become incapacitated.

The 4th GvBAP based at Chernyakhovsk near Kaliningrad (Baltic MD) had the distinction of being the first operational unit of the VVS to receive the new bombers. Previously the regiment had flown the Yak-28 bomber and was tasked with strike missions along the coastline and at sea. As the Cold War was raging, priority for receiving the Su-24 was given to Air Armies and regiments deployed in the western military districts, where it replaced not only the obsolete Yak-28s (and the last surviving IL-28s) but also the more modern but 'shorter-legged' MiG-27.

In service the Su-24 proved to be frustratingly more demanding in maintenance – which was hardly surprising, given the complexity of the equipment. Additional headaches were caused by this being the Soviet Air Force's first experience with an aircraft whose systems were controlled by an on-board computer.

Flight preparation in particular was long and arduous, the Su-24 requiring appreciably more time and effort than previous types to prepare for a mission. On first entering service, an average of 45 minutes' work by 15 technicians was necessary. This effectively doubled the ground crew workload per flight compared with previous types – an insupportable situation which was vigorously tackled. The overall time was immutable because 45 minutes was the minimum time needed to spin up the gyros in the navigation/attack suite. Some missions requiring a greater degree of accuracy needed as much as 1 hour 20 minutes' preparation. It was discovered that pre-flight inspection required technicians to remove and replace securely 48 panels and hatches. Furthermore, about one-third of these covers were prone to opening during flight if not properly latched, appearing perfectly secure until a reduction in ambient air pressure during flight caused them to pop open.

As well as redesigning the cover latches, the Sukhoi OKB made great efforts to reduce pre-flight check time by giving easier access to engines, systems, filters, governors and control levers. Wheel changes were simplified by eliminating the need for lifting equipment. Single-point pressure refuelling also reduced mission preparation time. Additionally, as long as the tanks were drained completely before refuelling started, fuel flow from the fuel



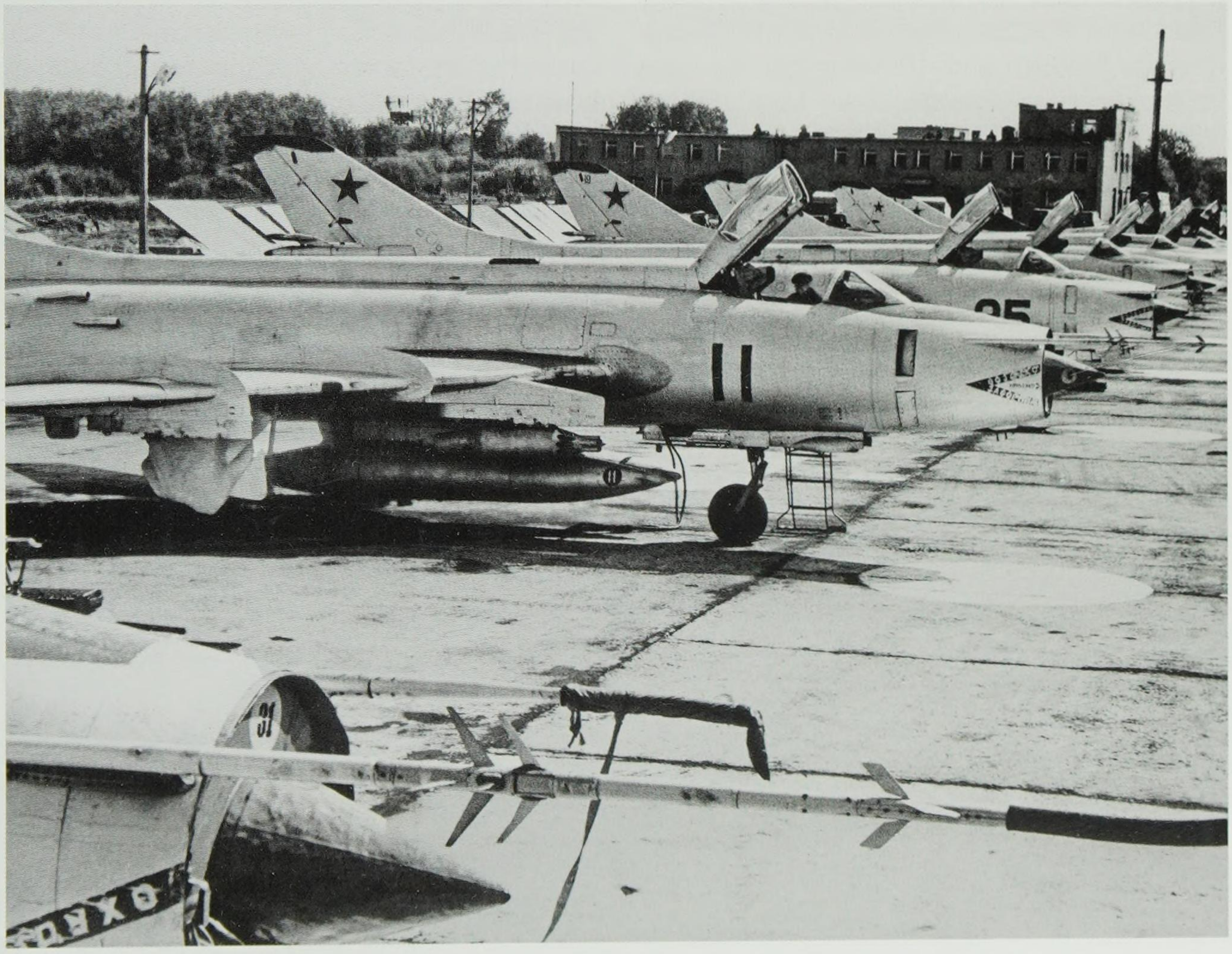
Su-17M '04 Blue' with an 'Excellent aircraft' badge

bowser could be stopped automatically when the tanks were full.

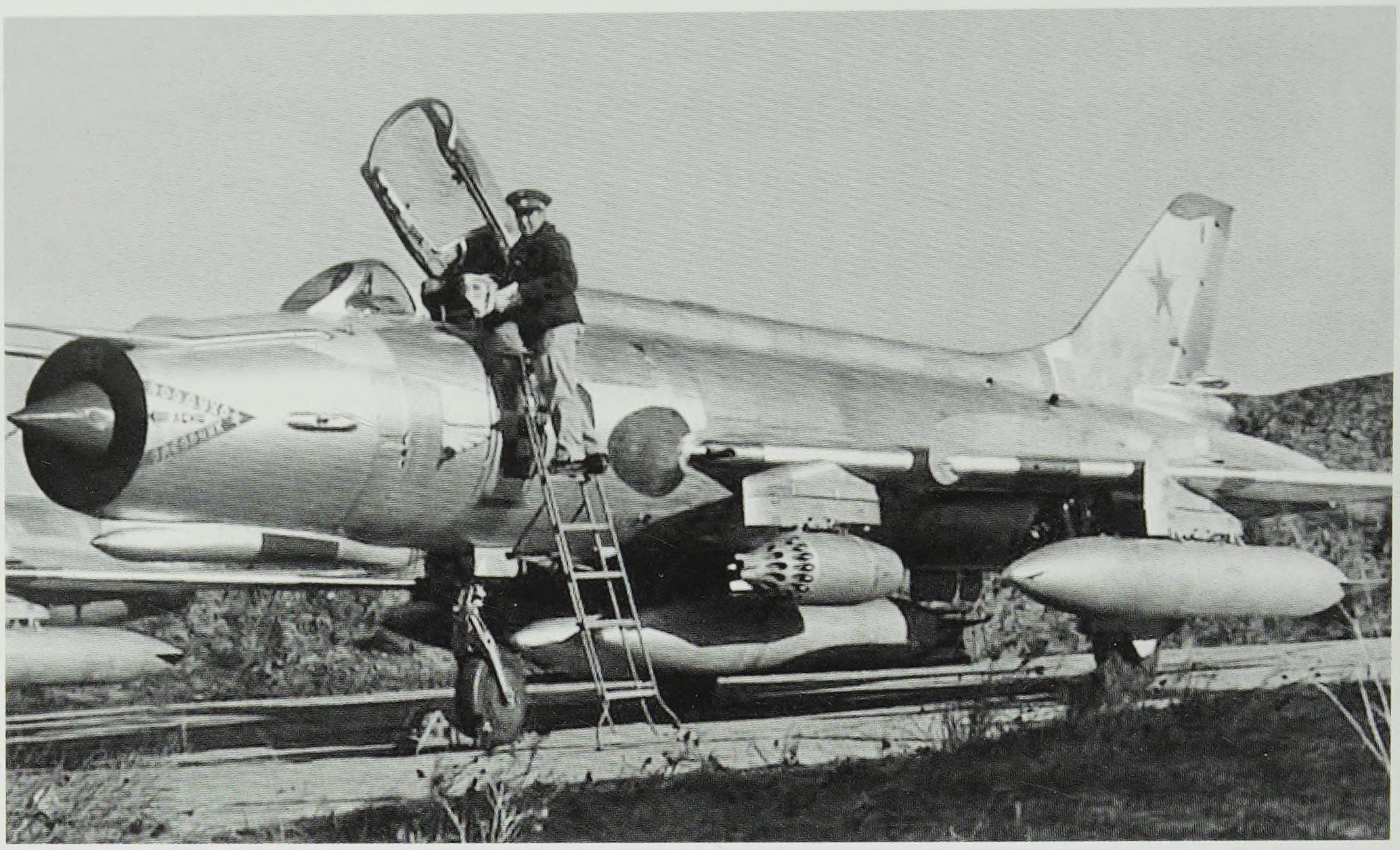
Other maintenance problems included cases of hand injuries if the removal of a support under one of the pneumatically-operated cockpit canopy doors coincided with a sudden loss of pressure, causing the door to slam shut. The awkward location of the connector for a portable lamp below one of the airbrake panels was another potential source of hand injuries.

Hand and foot injuries among ground crews to also gave rise to complaints about the poor design of the handling equipment for the bombs, rockets, drop tanks and the various special pods that were carried on the pylons. But the biggest headaches to ground staff and aircrew alike were caused by the navigation/attack suite and other avionics. Such was the need for this type of bomber that the Su-24 was rushed into service before the state acceptance trials had been completed. The complexity of the many systems and the on-board computer taxed the knowledge, experience and patience of the crews. Malfunctions were frequent and in the early stages there were instances of whole squadrons being grounded for several days until remedies were found.

In-flight malfunction of the navigation/weapons control suite could all too easily put the crew at risk, especially on low-level missions. At best the target was missed. Too often the crews failed to realise that there was a problem with the equipment and continued the attack in automatic mode, ending up any-



A line of Su-17Ms fitted with drop tanks and UB-16-57UM FFAR pods. Note how the tactical code is repeated on a red circle on the drop tanks.

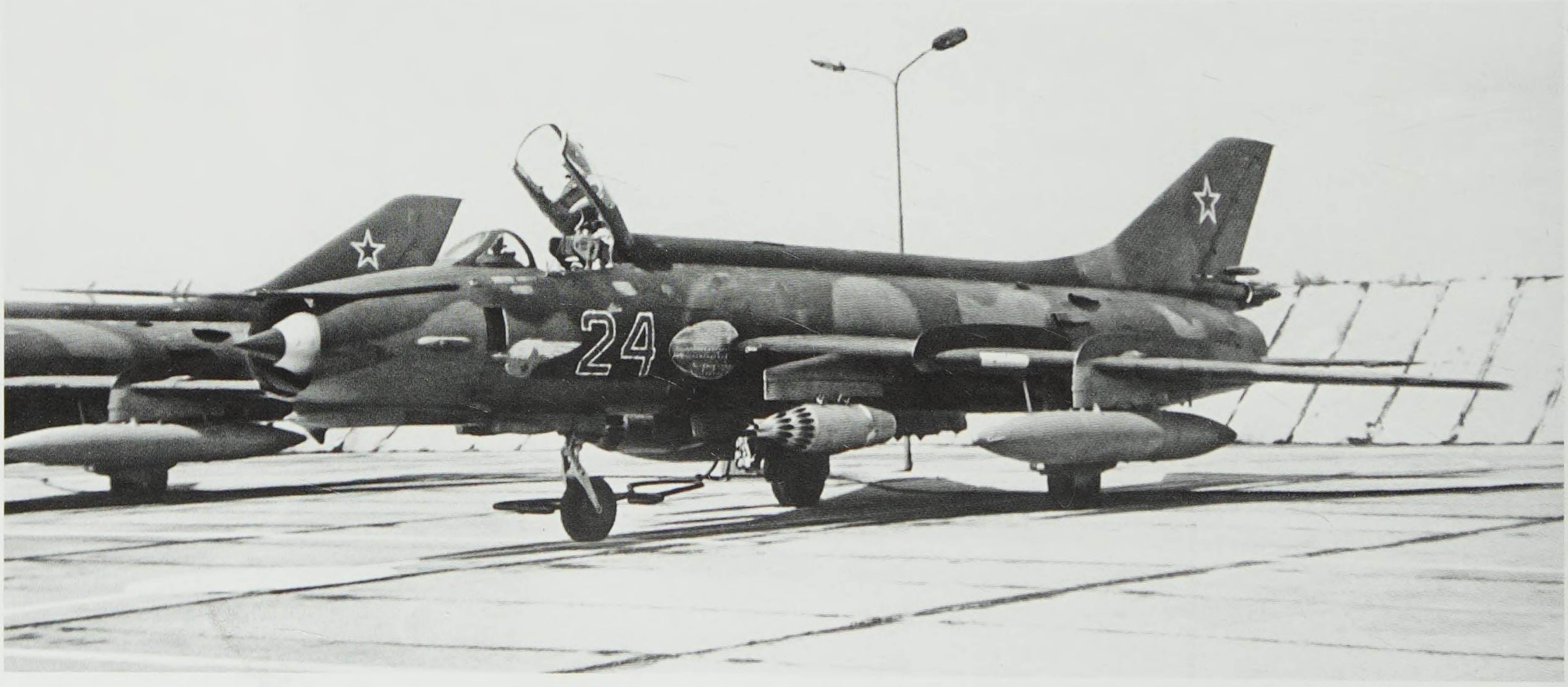


Two natural metal Su-17M2s in an earthen revetment. '32 Red' has had a skin panel replaced, losing part of the Sukhoi OKB 'winged archer' badge on the nose in so doing.

where but the target range; as a result, it was not uncommon for farms to lose valuable crops, buildings or livestock. One crew was unaware of a fault until they realised they had lost their way; eventually they ran out of fuel and had to eject. In other cases, early detection of a system failure followed by rapid remedial action could avert disaster. Captains M. Yevgrafov (pilot) and R. Fazliakhmetov (WSO), whose automatic nav/attack suite failed on the actual attack course, did recognise the problem and, thinking fast, resorted to the back-up optoelectronic bombsight – which, in accordance with Murphy's Law, also failed immediately. Quickly switching to manual mode, they succeeded in locating the target visually and destroying it on their first run. Such obstacles might have led lesser men to abort the mission but this was a classic case of fortune favouring the brave.

Once the problems with the engines and airframe (including the wing sweep mechanism) had been recognised by the OKB, they were tackled in due course. The Su-24 crews soon learned to appreciate the qualities of their new mount, affectionately christening it *chemodahn* (suitcase) as a reference to the slab-sided shape of its fuselage. One particular cause for satisfaction was the aircraft's ability to withstand bird strikes; one collision with a large eagle and another with seventeen sparrows resulted in no serious damage, at least not to the aircraft. No doubt memories of the idiosyncrasies of their previous mounts helped

'24 Red', a camouflaged Su-17M2 with two PTB-800 drop tanks and two UB-32A FFAR pods, parked in front of a concrete blast wall.



Soviet pilots discuss matters beside a Su-17M2 parked in front of a hardened aircraft shelter. The aircraft ('08 Red') carries a Prozhektor-1 laser designator pod working with Kh-25L air-to-surface missiles.

the aircrews to appreciate the good field of view, the rational cockpit layout and the help received from the control system's terrain-following feature in low-level operations.

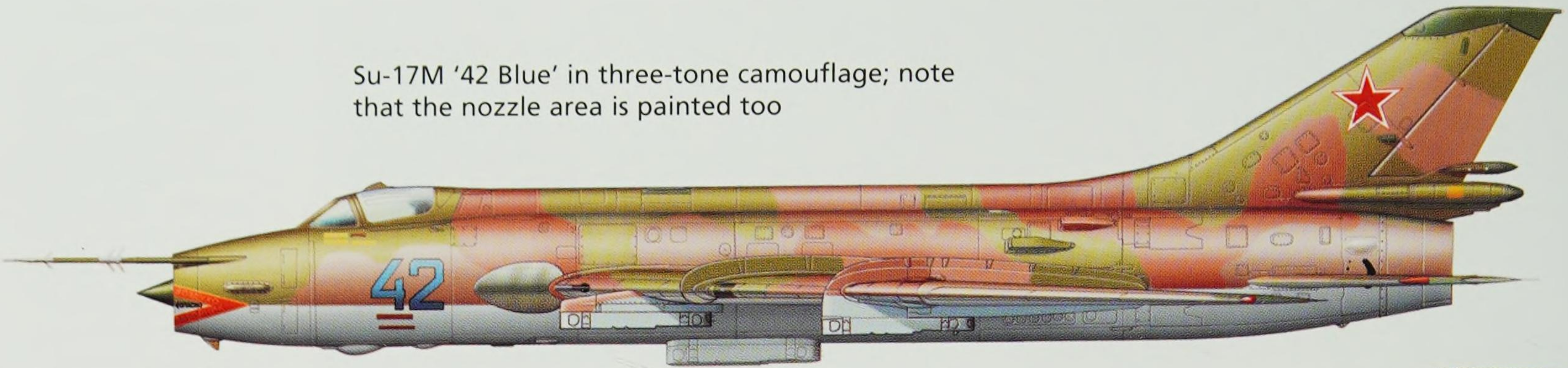
The *Fencer*'s handling was not difficult but, like many aeroplanes, it could be less forgiving in certain circumstances. For example, if one main undercarriage strut or set of flaps failed to extend during approach then, at a high angle of attack, the nose would pitch up and stall the aircraft. Nevertheless, compared with the Yak-28, landing the Su-24 was much less fraught.

As a result of the problems discovered when the Su-24 first entered service it soon became clear that it was necessary to impose performance restrictions until all faults were remedied. Maximum speed at sea level was limited to 800 km/h (497 mph), banking turns of more than 60° were prohibited and manoeuvres were limited to 3Gs when carrying drop tanks. One by one these restrictions were lifted as the defects were dealt with, and the FA had, at last, a fine tactical bomber.

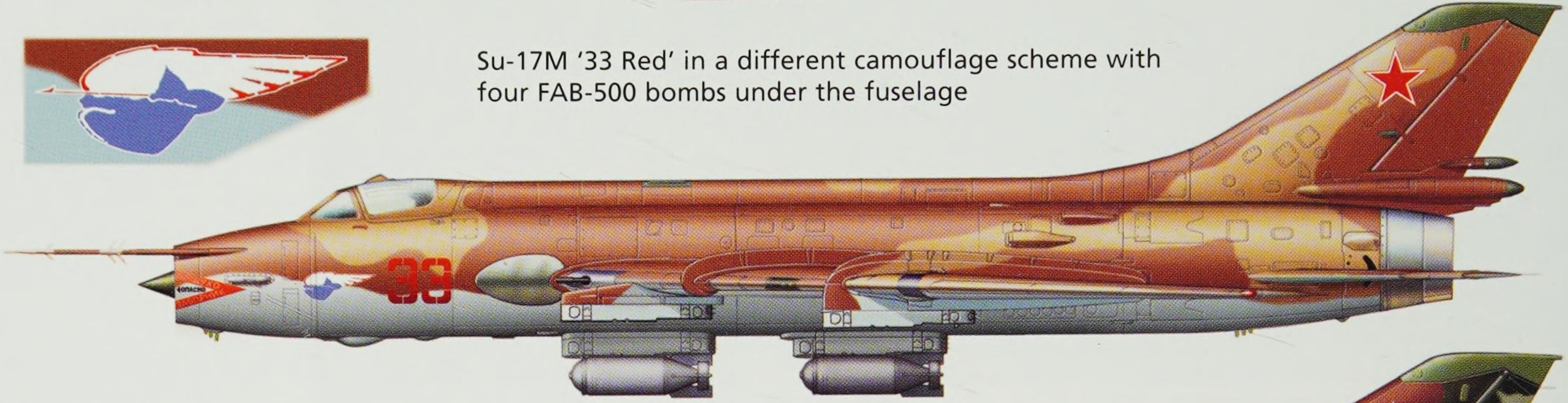
The early 1970s were characterised in the Tactical Aviation by the service entry of another fast twin-engined type – the reconnaissance/strike versions of the MiG-25 whose fighter versions served with the PVO. The MiG-25R/MiG-25RB *Foxbat-B* had had its successful combat debut during a brief deployment in Egypt (see Chapter 5 for more details), showing the value of this aircraft for the FA. As usual, the reconnaissance/strike versions were first evaluated by the 4th TsBP i PLS in Lipetsk which developed tactics and recom-

This flight line is occupied by a mix of Su-17M2s and Su-17UM3 trainers. Note that the two-seaters carry smaller star insignia on the tails.

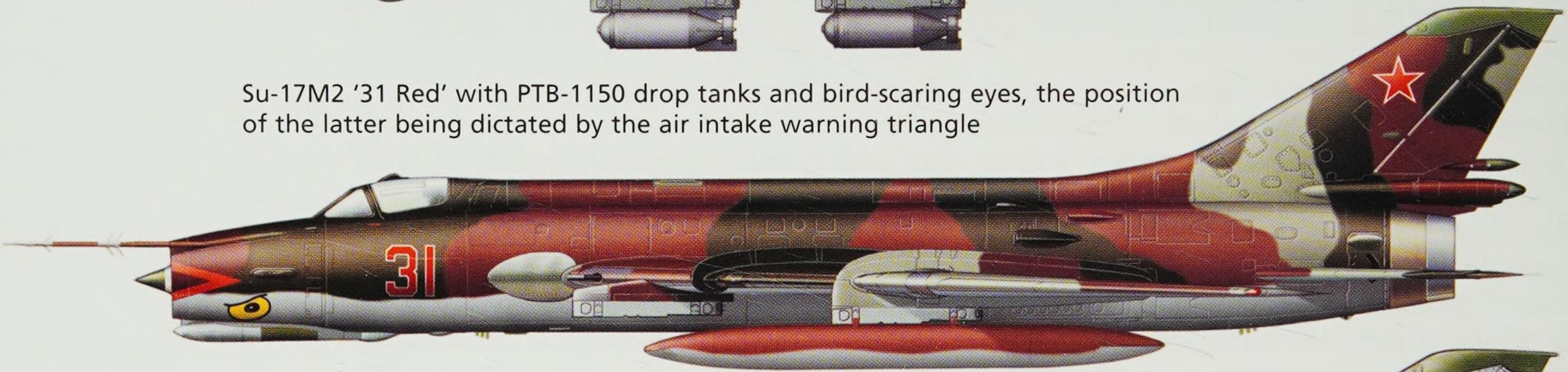
Su-17M '42 Blue' in three-tone camouflage; note that the nozzle area is painted too



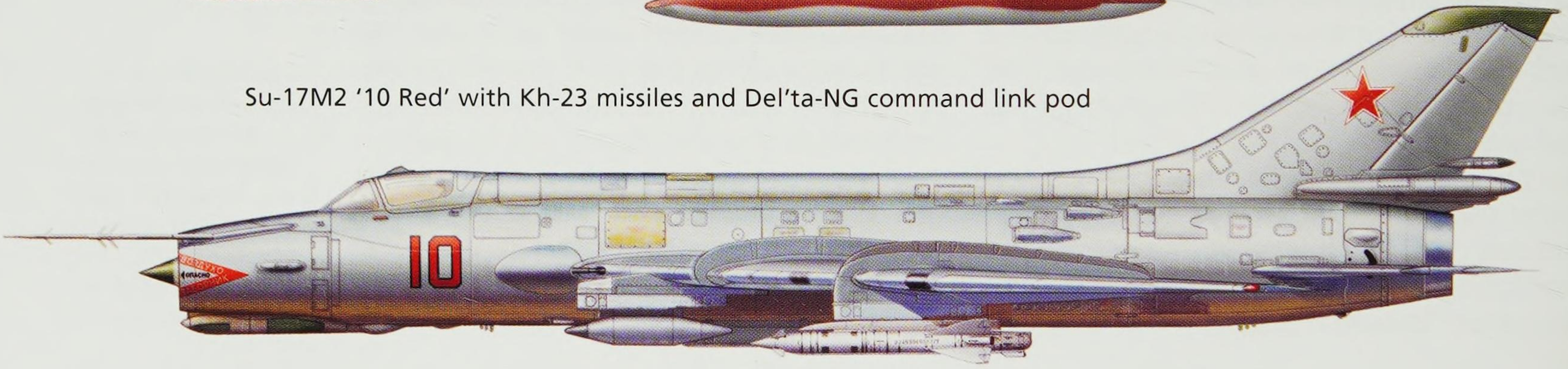
Su-17M '33 Red' in a different camouflage scheme with four FAB-500 bombs under the fuselage



Su-17M2 '31 Red' with PTB-1150 drop tanks and bird-scaring eyes, the position of the latter being dictated by the air intake warning triangle



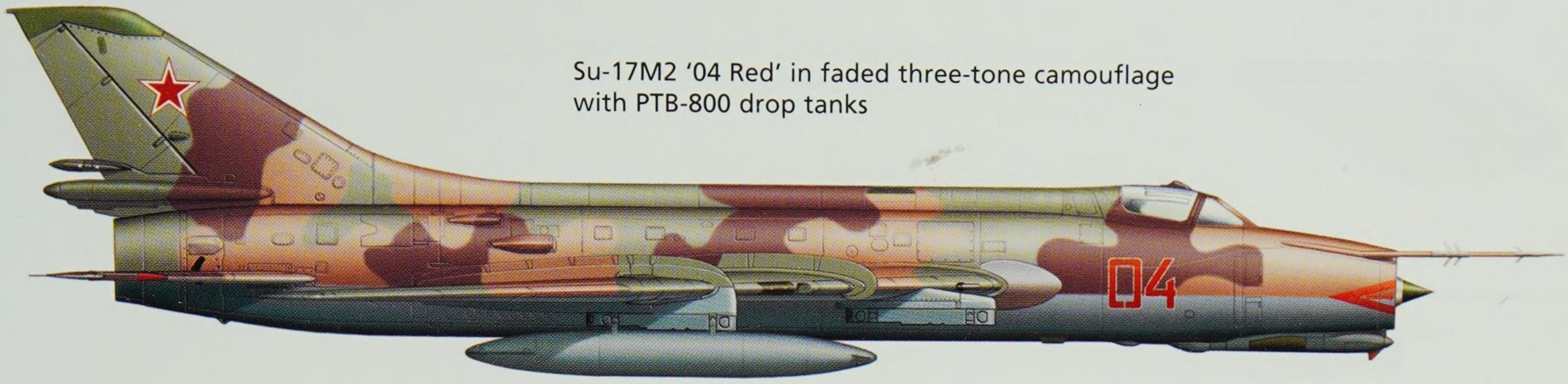
Su-17M2 '10 Red' with Kh-23 missiles and Del'ta-NG command link pod



mendations. First-line operations of the MiG-25R *et seq*. began in the 47th GvORAP based at Shatalovo AB (Smolensk Region, Moscow MD). This was followed by other independent reconnaissance air regiments based all over the Soviet Union and abroad; these included the 48th GvORAP at Kolomyya (Carpathian MD) and the 39th ORAP at Balkhash (Central Asian MD), plus units in East Germany and Poland (see Chapter 6). As a rule, such regiments were composite units operating a mix of types; one squadron flew the Yak-28R and another was equipped with various versions of the *Foxbat-B/D* (MiG-25R, MiG-25RB, MiG-25RBV, MiG-25RBT, MiG-25RBS, MiG-25RBSh and MiG-25RBF).

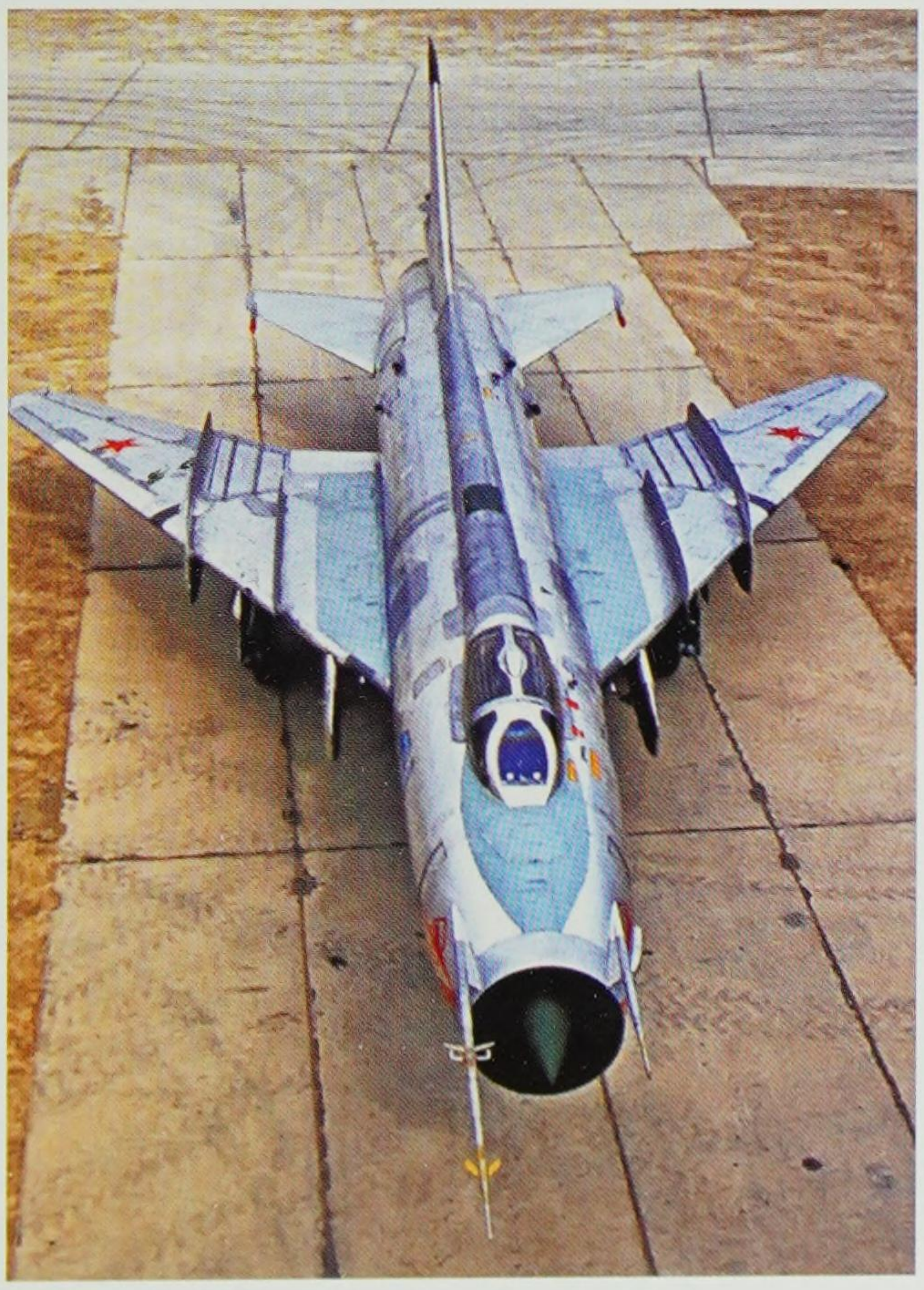
Another version operated by the Tactical Aviation was the MiG-25BM *Foxbat-E* suppression of enemy air defences (SEAD, or 'Wild Weasel') version armed with anti-radar missiles. This, too, was operated by squadrons within three independent reconnaissance air regiments or independent ECM air regiments, two of which were based abroad – the 10th ORAP at Shchoochin (Belorussian MD), the 931st ORAP at Werneuchen (Group of Soviet Forces in Germany) and the 115th OAPREB at Brzeg (Northern Group of Forces, Poland).

The pilots transitioned to the *Foxbat-B/D/E* from all manner of aircraft, including such ancient types as the MiG-17 and Yak-27R whose performance was incomparable to that



Su-17M2 '04 Red' in faded three-tone camouflage with PTB-800 drop tanks

Two Su-17M2s with missile launch rails on the wing and fuselage pylons. The camouflage has been applied around the existing warning stencils.

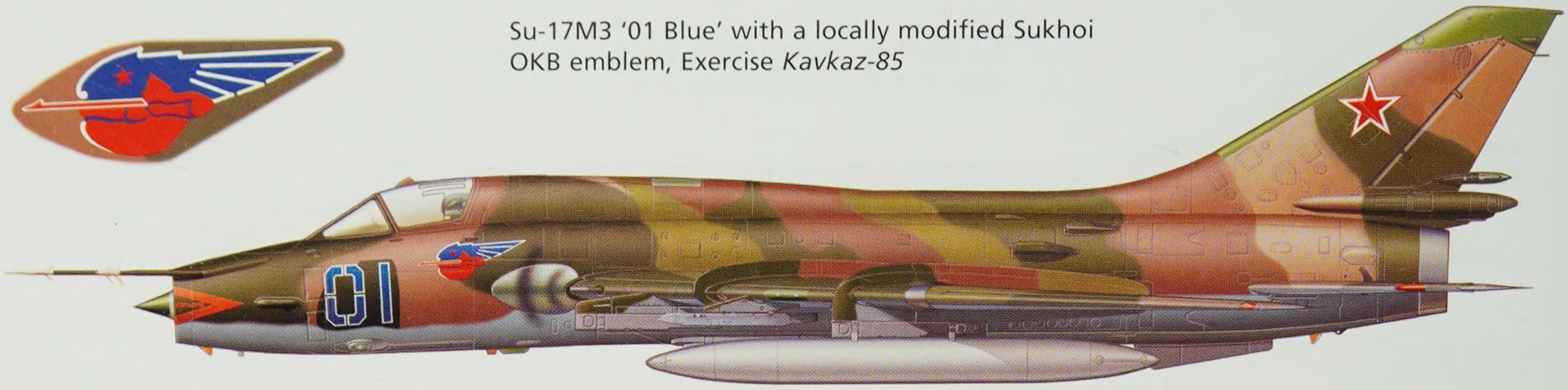


Seen from the top of an HAS, this blue-coded Su-17M shows the varying shades of metal on the skin panels, the grey walkways on the wing roots and anti-glare panel. The dark green panel on the spine conceals the ADF loop aerial.

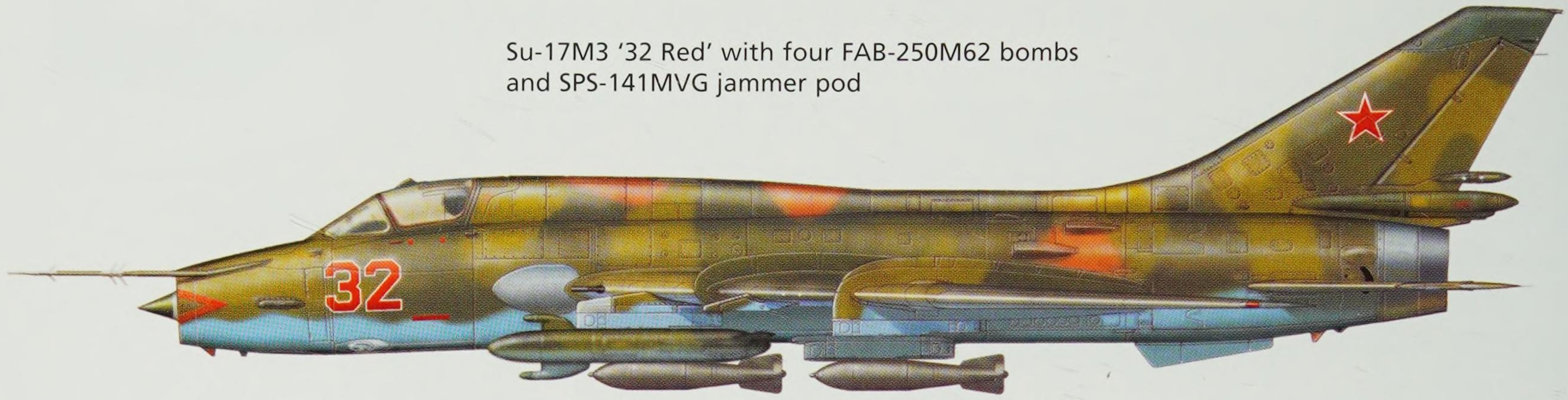
of the Mach 3 MiG-25. Those converting from the Su-7 had the least trouble; the MiG-25's advantages over the latter type from a pilot's point of view included better handling, a lower landing speed and better cockpit visibility (though the latter appears improbable at first glance, considering the *Foxbat*'s rather small canopy). Pilots who transitioned from light fighters had a harder time; flying the MiG-25 was physically demanding – the stick forces could reach 16 kgf (32.5 lbf). Hence many pilots mastered a trick, using not the control stick itself but the mini-joystick of the trim mechanism on the stick grip to control the aircraft in the pitch plane; some used it so actively that a hole appeared on the thumb of the right-hand flying glove! As regards manoeuvrability, the MiG-25 behaved more like a bomber than a fighter.

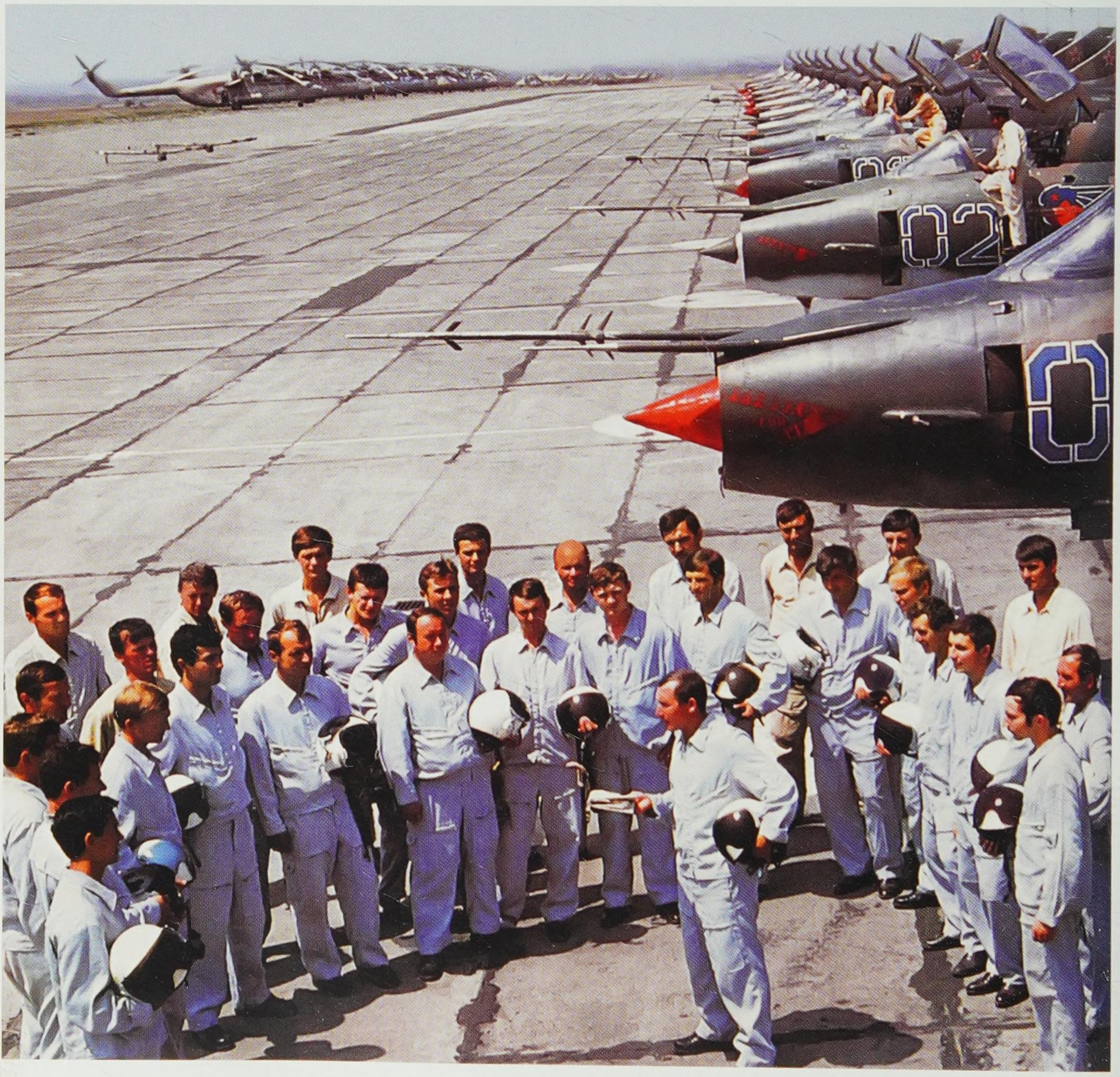
In the 1980s the Soviet Tactical Aviation re-equipped with new types and versions of combat jets – fighters, fighter-bombers, tactical bombers, reconnaissance aircraft and ECM air-

Su-17M3 '01 Blue' with a locally modified Sukhoi OKB emblem, Exercise *Kavkaz-85*

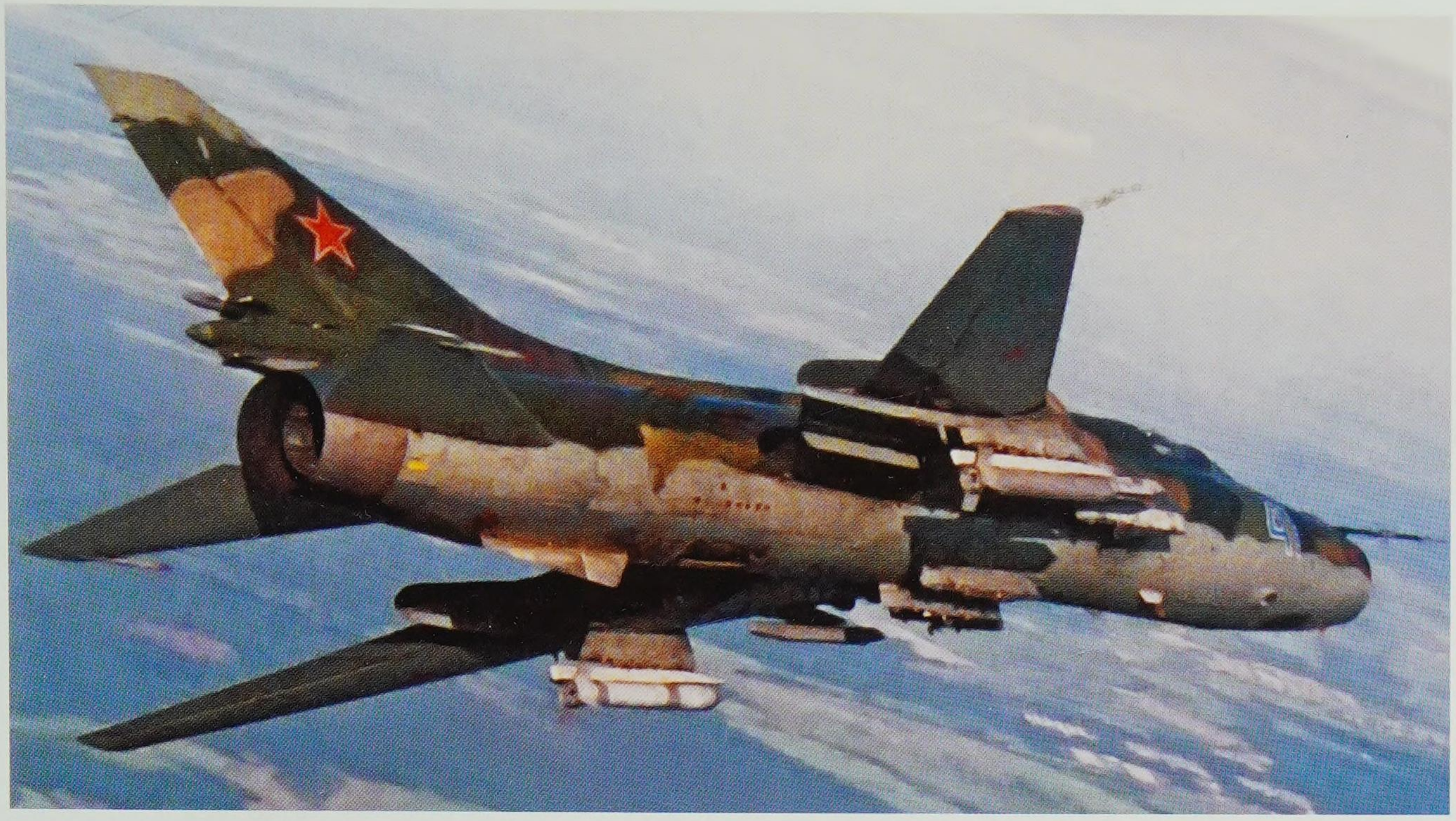


Su-17M3 '32 Red' with four FAB-250M62 bombs and SPS-141MVG jammer pod

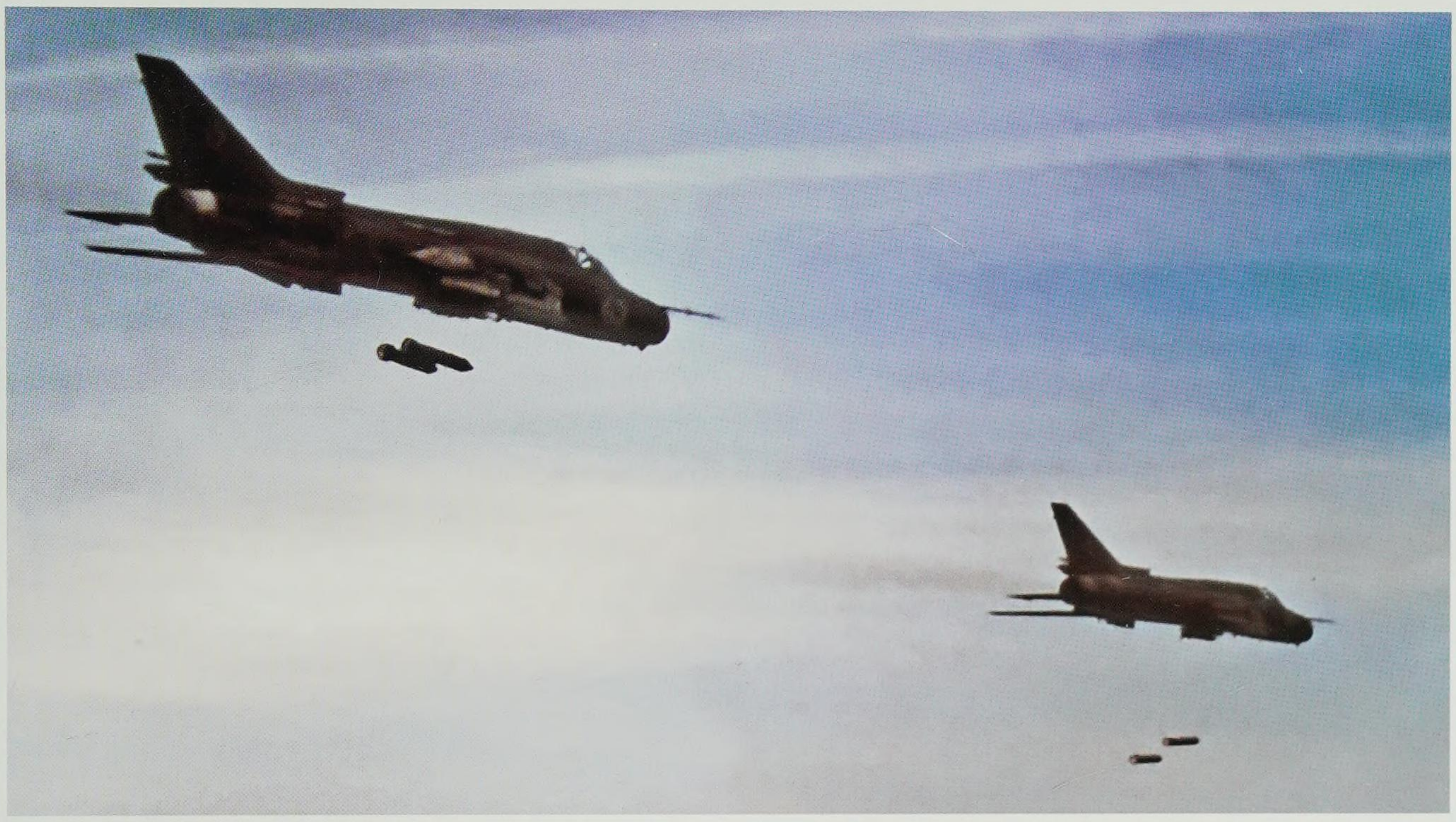




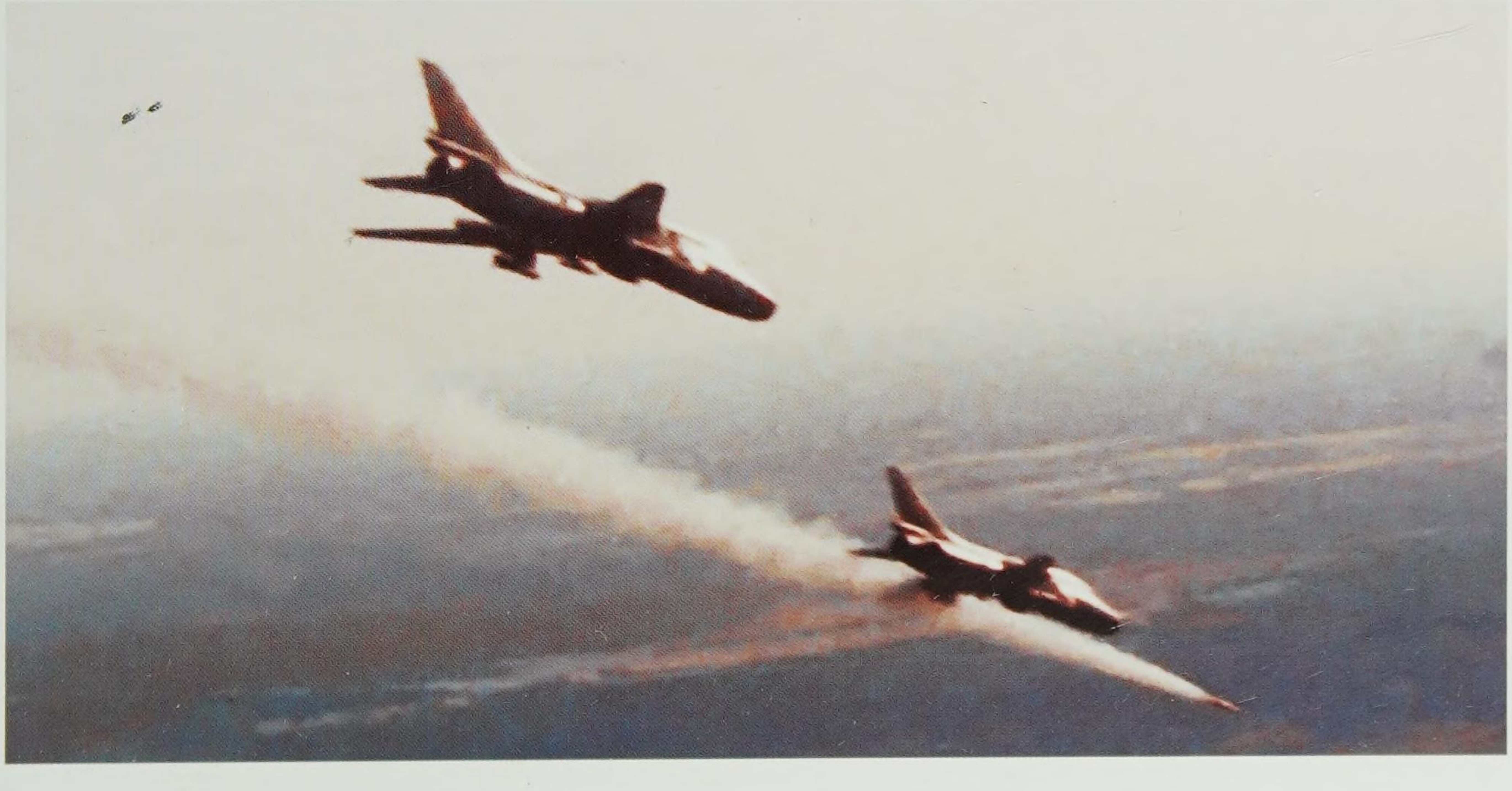
A scene from Exercise *Kavkaz-85* as pilots receive an express briefing. Su-17M3 '02 Blue' wears a home-grown version of the Sukhoi 'winged archer' emblem with incorrect colours. Note the Mi-6 transport helicopters in the background.



Su-17M3 '41 Blue' is armed with a pair of S-24 heavy unguided rockets on the wing glove pylons.

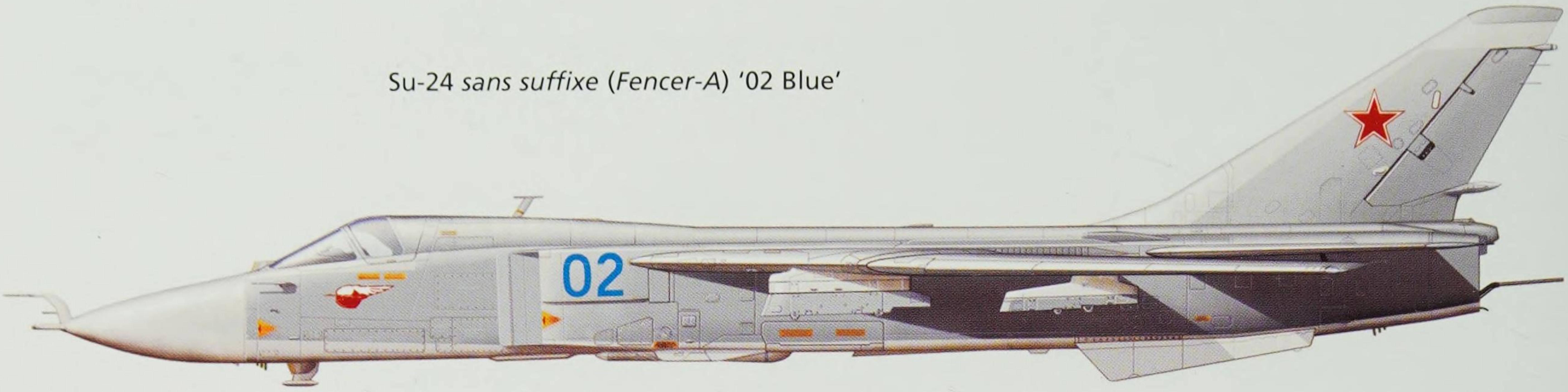


A pair of Su-17M4s ('41 Blue' and '43 Blue') drop two OFAB-500ShN parachute-retarded bombs each.

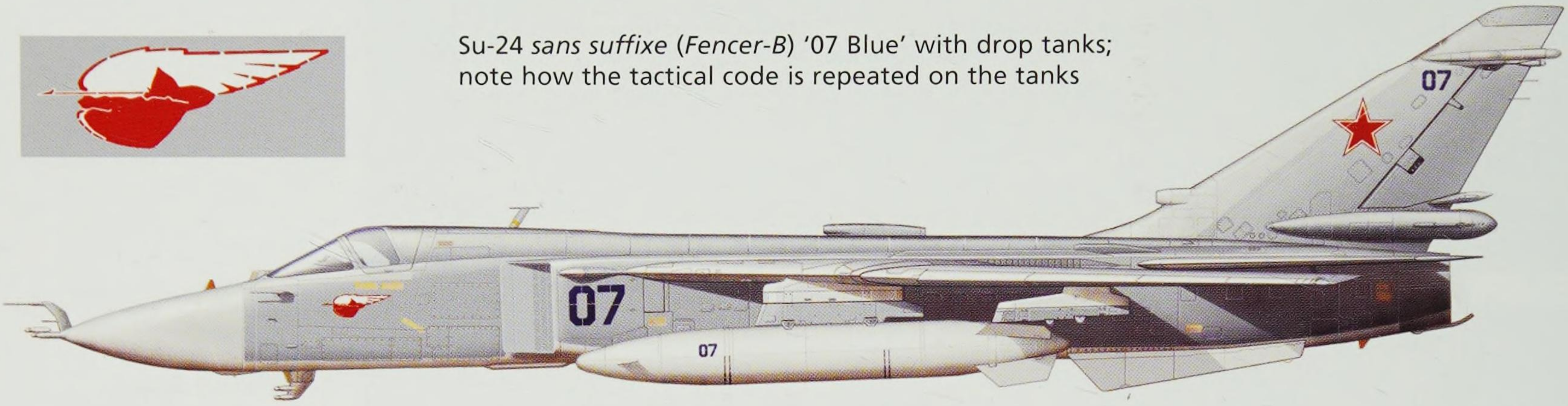


A pair of Su-17M3s launch an attack with S-25 heavy unguided rockets. Note the heavy smoke plume left by the rockets; for this reason the S-25s were carried exclusively on the outermost hardpoints to minimise blast gas ingestion.

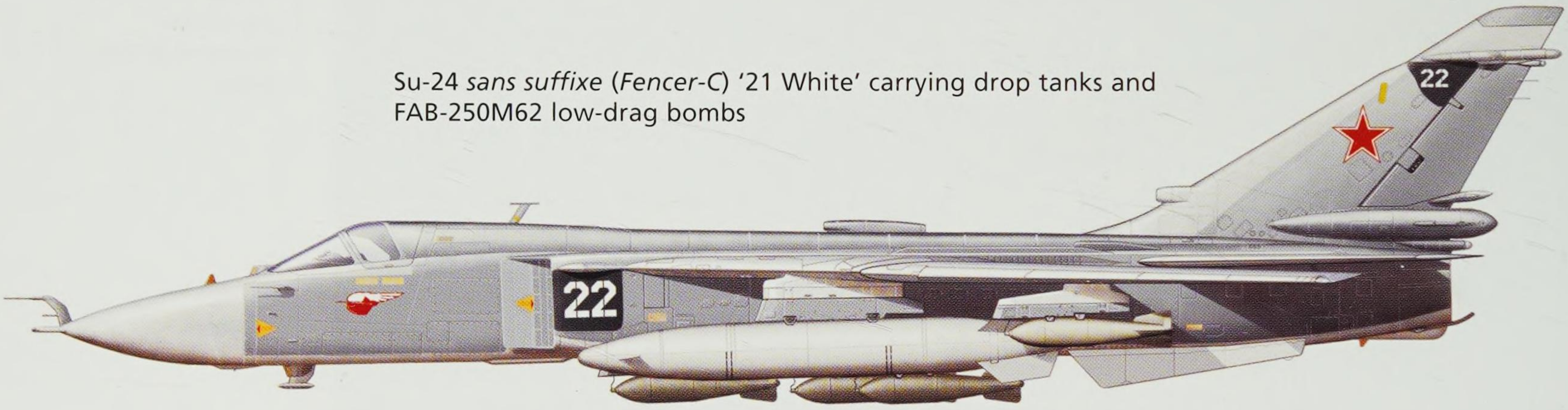
Su-24 *sans suffixe* (*Fencer-A*) '02 Blue'



Su-24 *sans suffixe* (*Fencer-B*) '07 Blue' with drop tanks; note how the tactical code is repeated on the tanks



Su-24 *sans suffixe* (*Fencer-C*) '21 White' carrying drop tanks and FAB-250M62 low-drag bombs



Su-24 *sans suffixe* (*Fencer-B*) '20 White' with drop tanks sits parked with the wings at maximum sweep.

Opposite: A *Fencer-B* streams its twin brake parachutes on landing.

craft; the availability of new AAMs, air-to-surface missiles and guided bombs allowed it to take on the potential adversary's nuclear attack assets and aircraft more effectively. All tactical strike aircraft, and some tactical fighters as well, had nuclear capability. Considering its impressive numerical strength, the Tactical Aviation was a force to be reckoned with.

A separate tactical component of the Air Force was the Army Aviation (AA – *Ar**mey**skaya avi**ah**tsiya*) operating assorted helicopters. Its principal types in the 1960s/1980s were the Mil' Mi-6 *Hook* heavy-lift helicopter, the Mi-8 *Hip* utility helicopter and the Mi-24 *Hind* assault/transport helicopter. In addition to general utility and armed transport/assault versions, the ubiquitous Mi-8 was supplied in various special mission versions (ECM, command post and so on). New versions of the Mi-8 and Mi-24 fielded in the

A Su-24 *Fencer-B* is refuelled by a TZ-22 fuel bowser on the flight line.

The crew of a Su-24 *sans suffixe* (*Fencer-B*). Note that the airbrakes/ main gear doors of '47 White' have 'bled' down or have been opened for maintenance.

1980s were better armed and more dependable, enabling the Army Aviation to perform its tasks (close air support and short-range airlift) more effectively than in the 1970s.

The Army Aviation's 344th TsBP i PLS in Torzhok, Kalinin Region (now Tver' Region), was the first to master the Mi-8 helicopter. It was soon followed by other units of the Soviet Air Force. Known colloquially as *vos'****myor****ka* (The Eight), the helicopter soon became a true workhorse, serving in all military districts of the Soviet Union – the Baltic MD, Belorussian MD, Carpathian MD, Central Asian MD, Far Eastern MD, Leningrad MD, Moscow MD, North Caucasian MD, Red Banner Odessa MD, Transbaikalian MD and so on.

In the mid-1970s the rotary-wing element of the VVS was reorganised into the Soviet

The flying personnel of a Su-24 unit heads for the debriefing room at the end of a flying shift.

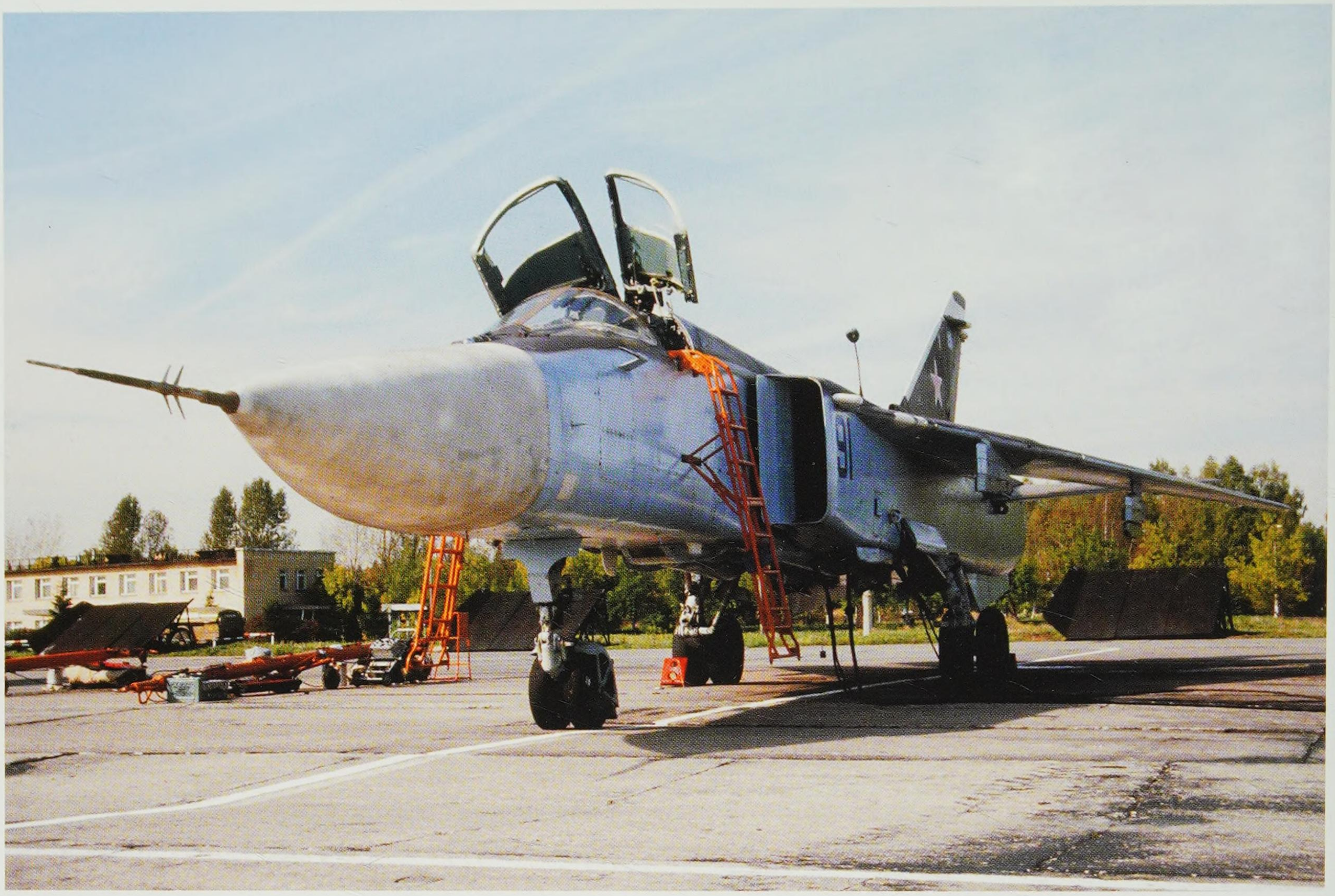
Army Aviation, or ASV (*Avi***ah***tsiya sookho-***put***nykh voysk* – Ground Forces Aviation). By the early 1980s the new service had about 15 independent combat helicopter regiments reporting to the headquarters of various mechanised infantry or tank armies, each unit consisting of two Mi-24 squadrons and a single Mi-8TV *Hip-C/E* squadron with 20 helicopters per squadron. Additionally, command post versions of the Mi-8 – the Mi-8VZPU *Hip-D* and the Mi-9 (Mi-8IV) *Hip-G* – served with independent combat control squadrons assigned to mechanised infantry or armour divisions. There were also independent ECM helicopter squadrons operating such versions as the Mi-8SMV *Hip-J* and the Mi-8PPA *Hip-K*.

Deliveries of the initial Mi-24A *Hind-A* to the Soviet Air Force commenced in 1970, followed by other versions as they entered production. First-line units operating the helicopter included the regiments located in Chernigovka (Far Eastern MD), Brody (Carpathian MD), Pruzhany (Belorussian MD), Mogocha (Transbaikalian MD), Raukhovka (Odessa MD), Berdichev (Carpathian MD) and so on. Because of its predatory silhouette and greenish-brown camouflage the Mi-24 was promptly dubbed *kroko***dil** (crocodile).

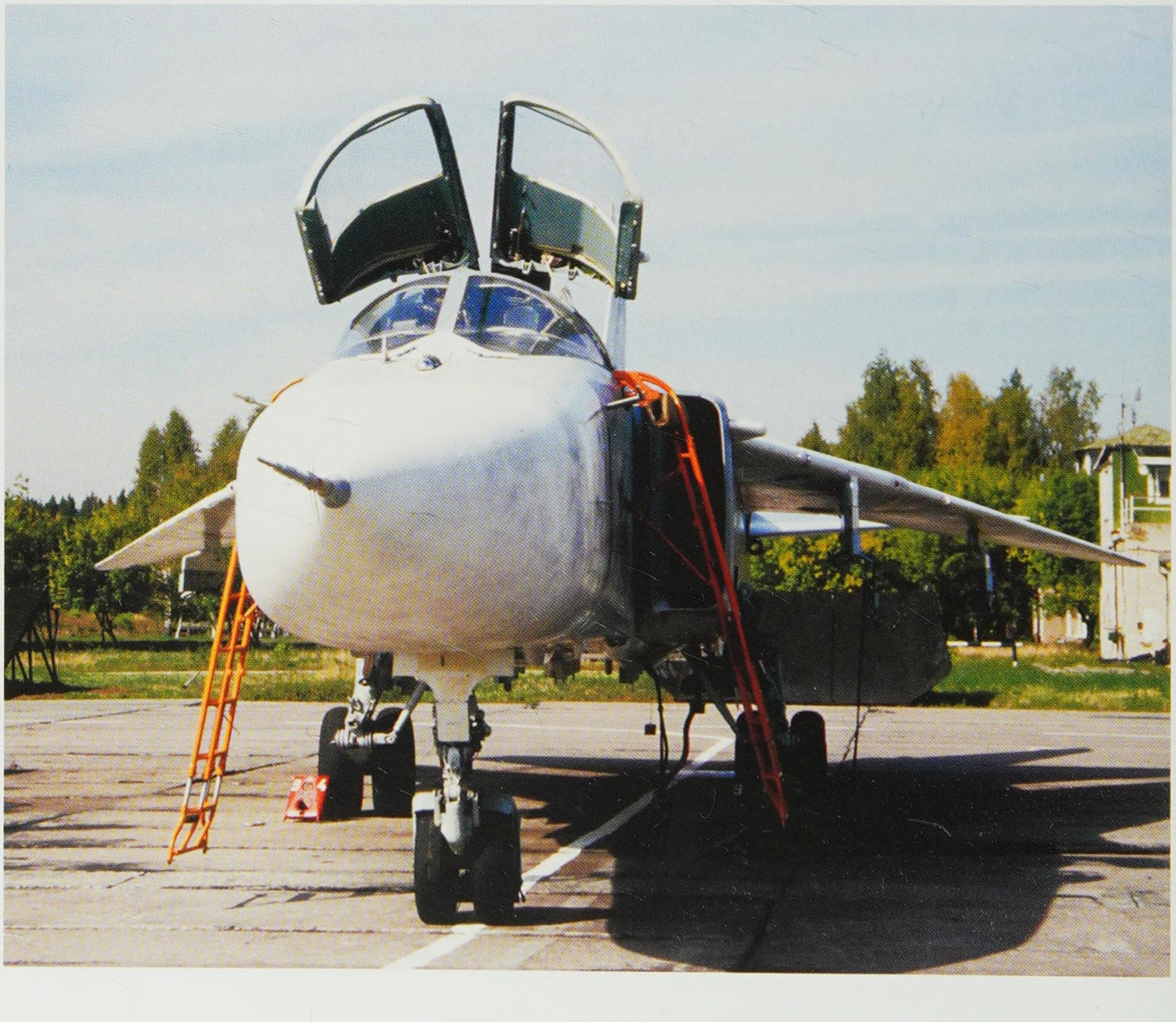
The pilots of early *Hind-As* were generally pleased with their handling and agility, which was surprising for a helicopter of its size and weight; the Mi-24A could climb with angles of attack up to 50°, make turns with more than 60° bank, stall turns and other vigorous manoeuvres. Yet the Mi-24 had its fair share of teething troubles. The TV3-117 engines' service life was initially a mere 50 hours. Poor visibility from the pilot's seat was another problem, especially with the optically-flat glaz-

A Su-24 *Fencer-B* passes overhead with the wings at an intermediate setting.

A pair of Su-24M *Fencer-Ds* head for the target range, carrying drop tanks and four OFAB-500ShN bombs each.



'91 Blue' belonging to the aviation hardware demonstration centre at Kubinka AB represents the Su-24MK export version and wears a dark green/dark earth camouflage with pale blue undersurfaces similar to the one worn by Iraqi *Fencer-Ds*.



Another Su-24M at Kubinka AB with the boarding ladders hooked up.

ing panels causing annoying reflections; this led the Mil' Design Bureau (OKB-378) to redesign the forward fuselage, incorporating separate bubble canopies for the pilot and the gunner. The problem of insufficient tail rotor authority was cured by relocating the tail rotor from the starboard side to the port side, switching it to tractor configuration and increasing its efficiency.

On the other hand, such major components as the main gearbox and main rotor gave little or no problems; what failures did happen were mostly caused by improper maintenance. On one occasion in 1976 a short circuit in the de-icing system caused a main rotor blade fire on a Mi-24A; the fire could only be extinguished by switching off all electric power. Several blade pockets were burnt out, but still the helicopter landed safely. Throughout its career the Mi-24 had many cases when rotor blades were damaged by anti-aircraft fire, birdstrike, collisions with trees or other helicopters or whatever, yet usually the chopper came home.

Unaccustomed to the Mi-24's retractable landing gear, in the early days the pilots often forgot to retract it – or, worse still, to extend it on landing approach, the helicopter suffering damage in the subsequent belly landing. Another drawback was the lack of adequate dual controls. Having only rudimentary flight controls, the WSO had to be a real ace to get the helicopter down in one piece if the pilot was incapacitated.

The Mi-24A's manually-guided 9M17M *Fa**lan**ga* (Solifuge/AT-2 *Swatter*) anti-tank guided missiles had an appallingly low kill ratio of 30%. This improved to over 80% when the 9M17P version and the ***Ra**duga-F* (Rainbow) semi-automatic command line-of-sight (SACLOS) guidance system were introduced on the Mi-24D *Hind-D*; the 9M114 Shtoorm (Assault/AT-6 *Spiral*) supersonic tube-launched ATGMs of the Mi-24V *Hind-E* had a kill ratio in excess of 92%.

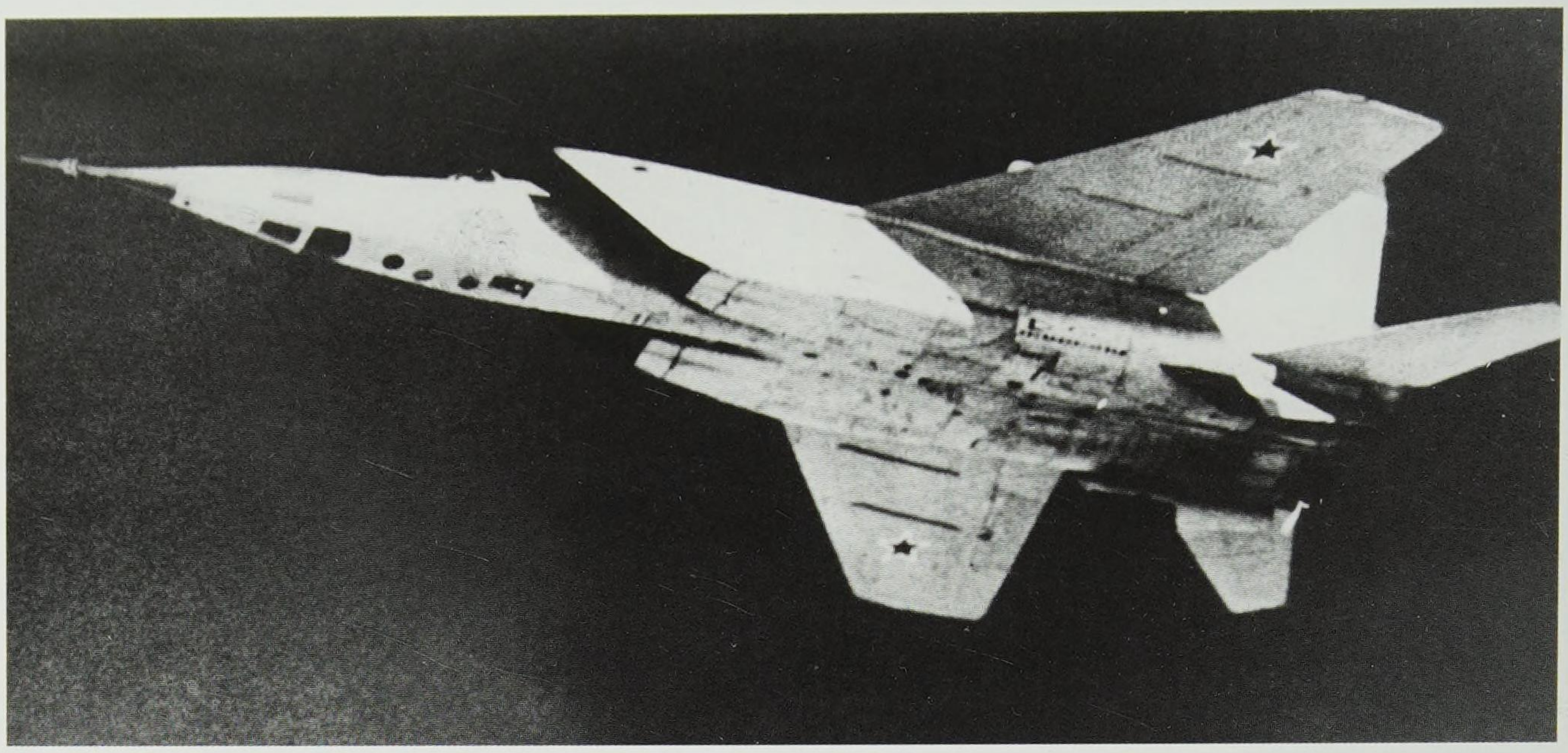
Getting the *Hind* up to scratch took some time; it was not until the Mi-24V entered service that the Soviet Army Aviation got a dependable tank-buster. Over the years, engine life and reliability were improved no end. There have been cases when the TV3-117 turboshafts continued to run normally after eating birds, foliage and other things that had no business being there. During the Warsaw Pact exercise *Shchit-79* (Shield) a Mi-24 crew messed up their schedule, appearing over the target too late when the range was already being bombarded by heavy artillery. As the pilot realised his mistake and turned the chopper around to get out of harm's way, one of the engines was hit by several shell fragments. On the way back to base the engine ran roughly but nevertheless showed no signs of catastrophic failure.

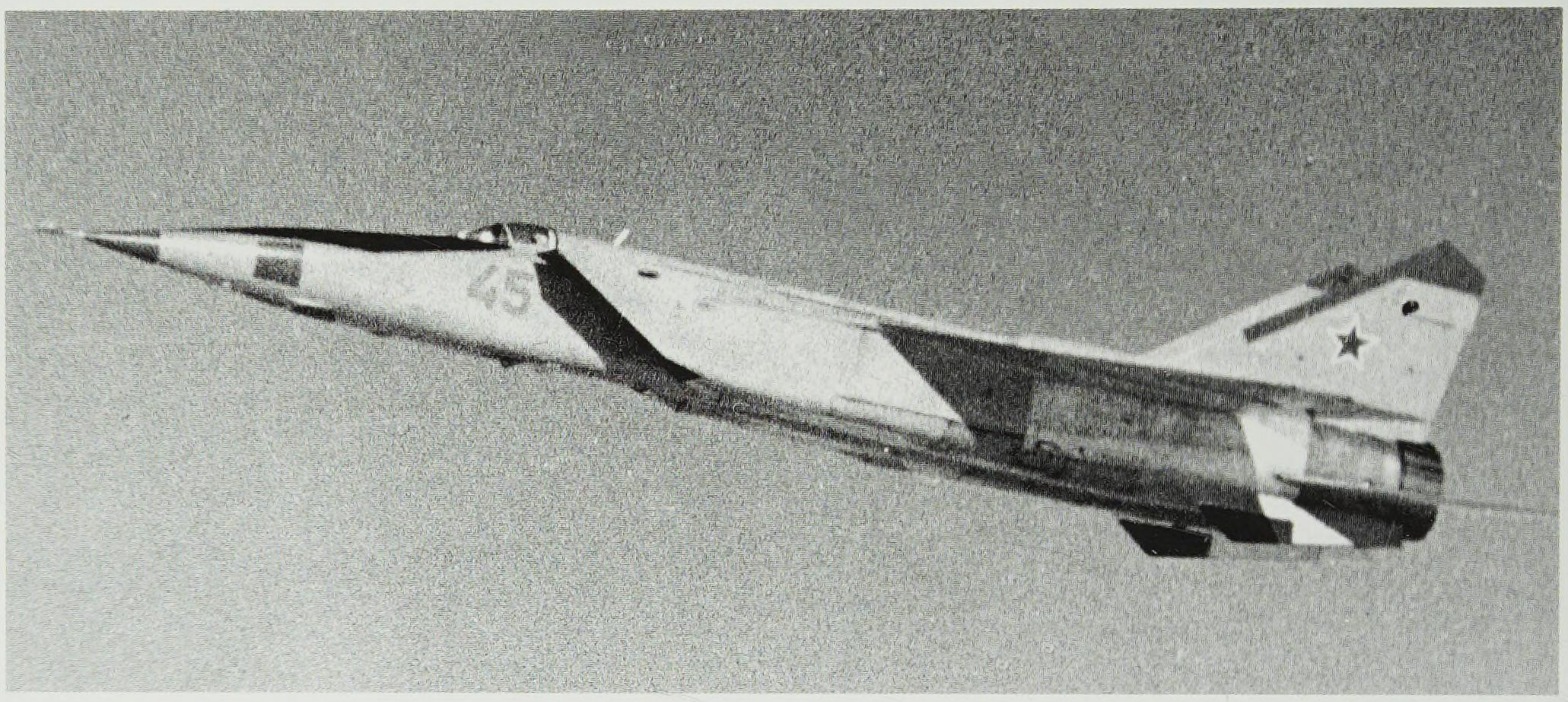
The Mi-24's 'responsibilities' were to provide cover and CAS for ground forces and assault groups airlifted by Mi-8T/TV and Mi-6 helicopters. The YakB-12,7 machine gun of the Mi-24D/Mi-24V (or, even more so, the 30-mm GSh-2-30 twin-barrel cannon of the Mi-24P *Hind-F*), augmented by UPK-23-250 cannon pods and bombs of up to 500-kg (1,102-lb) calibre carried on the stub wing pylons, were fairly effective against enemy personnel and emplacements in this role. On the other hand, the GUV pods (*gon**dol**a ooniver**sahl'**naya verto**lyot**naya* – multi-purpose helicopter pod), which could be outfitted with either three Gatling machine-guns or an automatic grenade launcher, proved disappointing in both configurations. Folding-fin aircraft rockets were the weapon of choice; however, Afghan War experience showed that the 57-mm S-5 FFARs were ineffective, and they were supplanted by 80-mm S-8 FFARs in the Mi-24's arsenal.

Destruction of low- and slow-flying aerial targets, notably other helicopters, was another role filled by the Mi-24. Until the Hughes (McDonnell Douglas Helicopters) AH-64 Apache came on the scene, the Bell AH-1G Huey Cobra and its Marine Corps version, the AH-1J Sea Cobra, were the *Hind*'s most dangerous rotary-wing adversaries. In an encounter with the Huey Cobra the Mi-24's strengths were its higher speed and rate of climb, while its main weakness was its relatively poor horizontal manoeuvrability, especially at low speed. This was important, as numerous trials had established that in a duel between two helicopters the one which could outturn the enemy at low speeds had better chances to make a kill. Other disadvantages were larger target area (25% bigger than the AH-1 in side elevation and 50% bigger in plan view) and severely restricted rearward and downward visibility for the pilot.

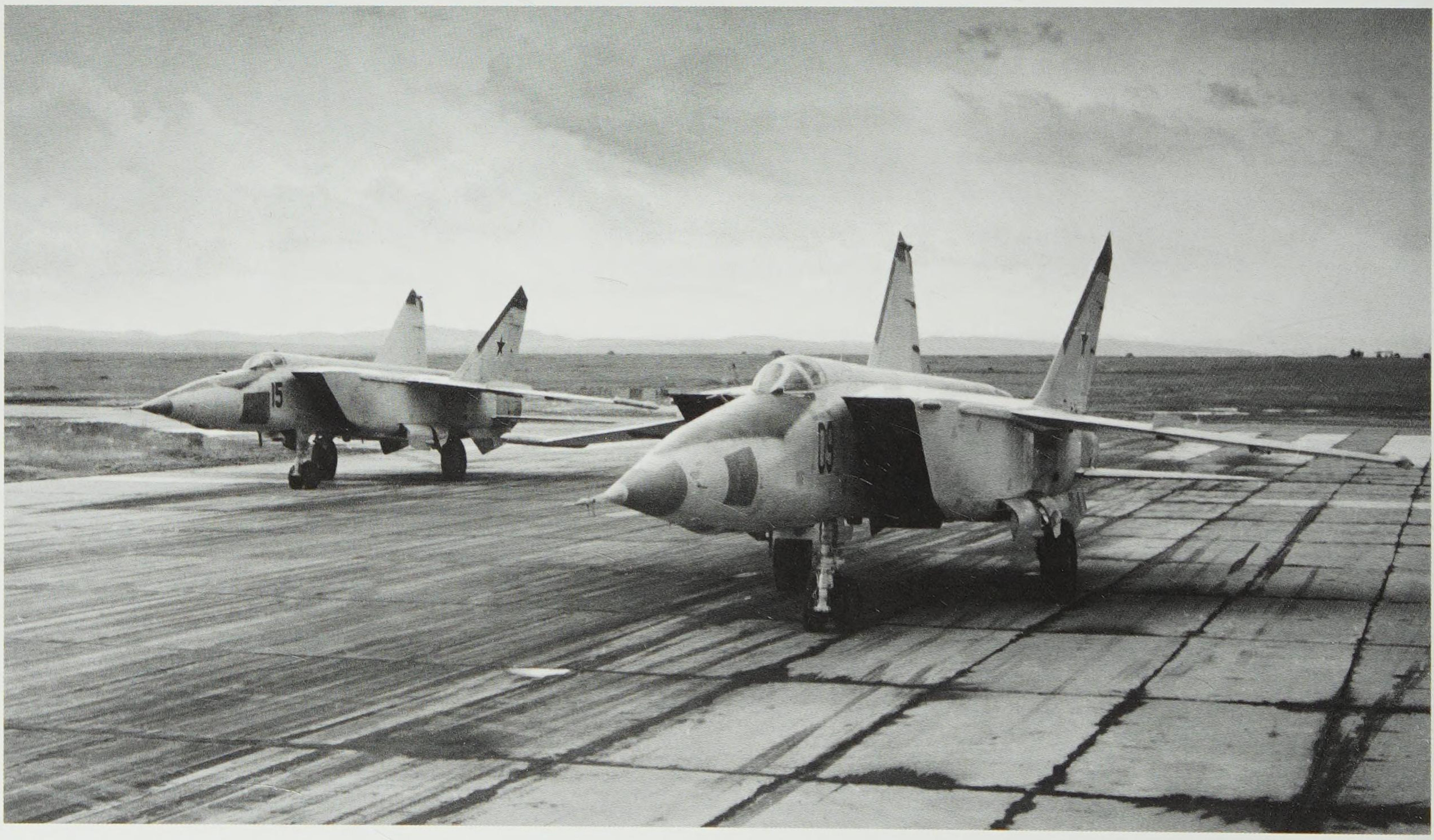
Soviet Army *Hinds* met the Huey Cobra when operating in the air defence role in the former East Germany. Usually such encounters were peaceful enough – the two helicopters flew side by side along the border between East and West Germany as the crews studied each other intently. One occasion in the early

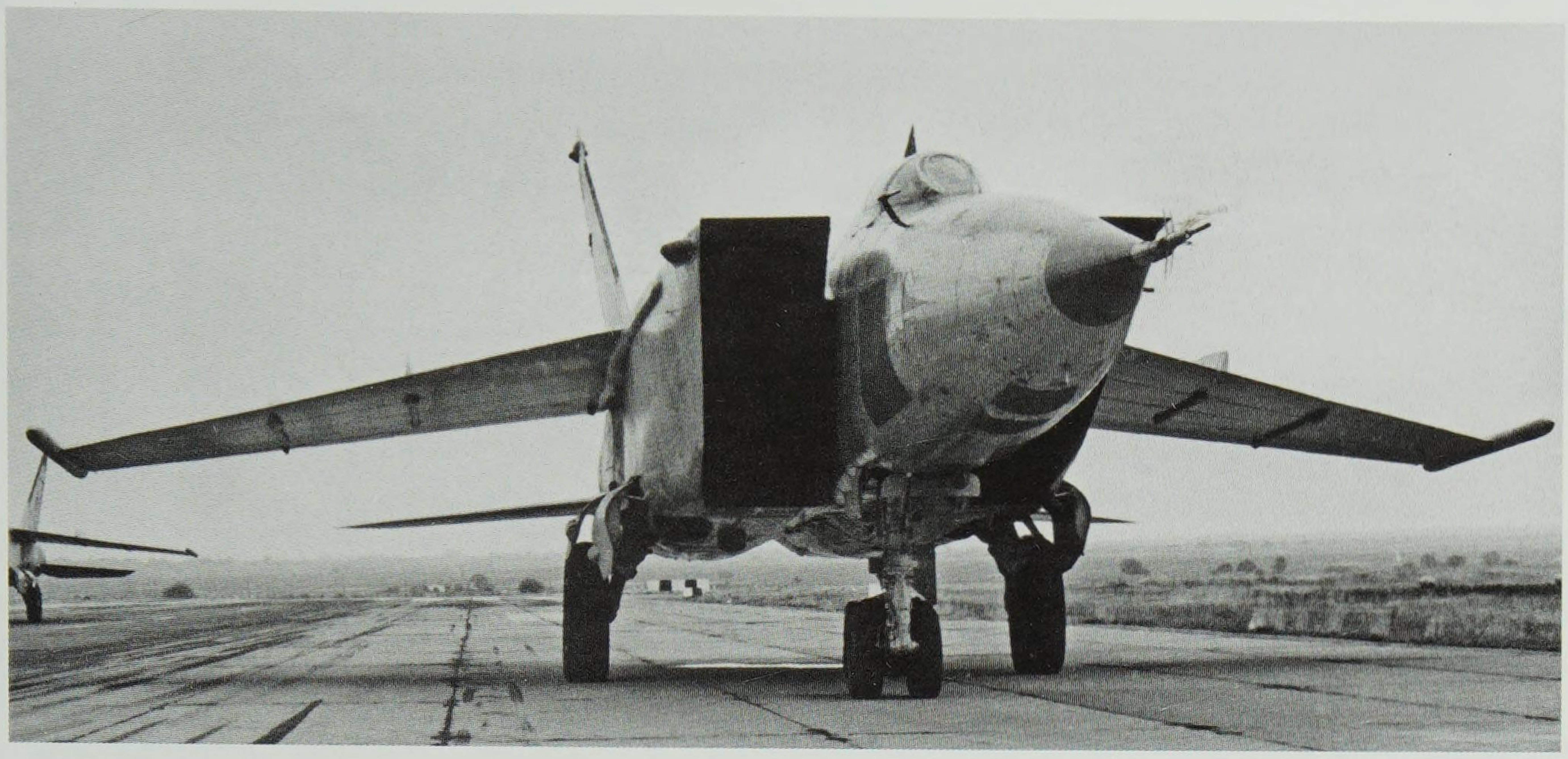
Two views of a MiG-25R coded '45 Blue', showing the camera windows and the dielectric panels associated with ELINT. The lack of wingtip anti-flutter weights shows this is a very early aircraft.



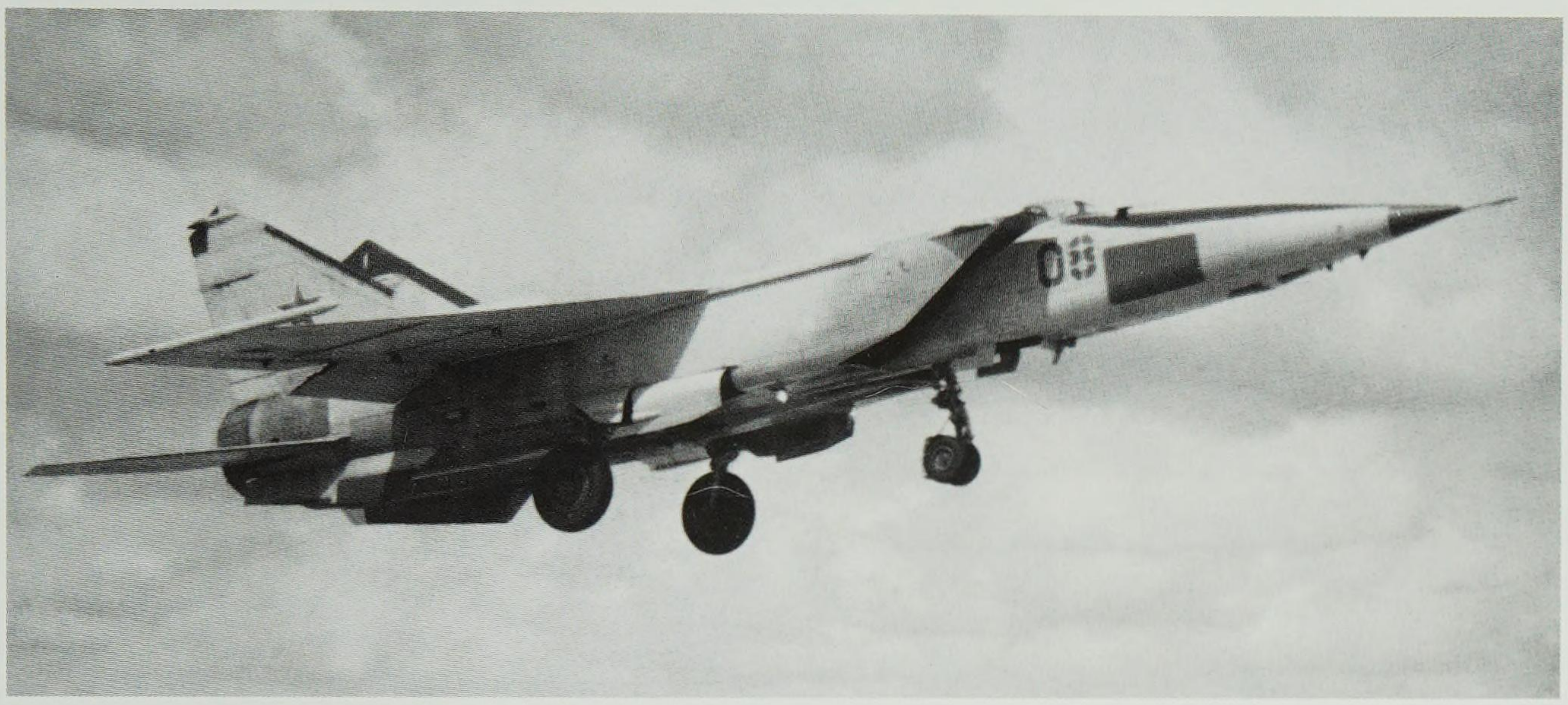


MiG-25RBK *Foxbat-B* '09 Red' and MiG-25RBS *Foxbat-D* '15 Red' line up for take-off. The different placement of the dielectric panels is obvious; the nose of the MiG-25RBS houses a side-looking radar.





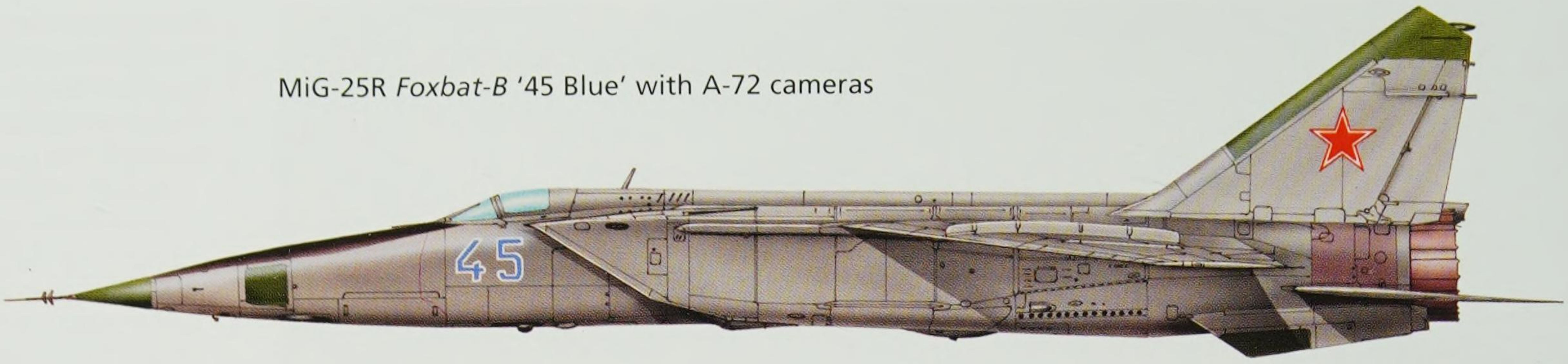
Front view of a MiG-25RBS. Note the ECM blisters on the air intake trunks.



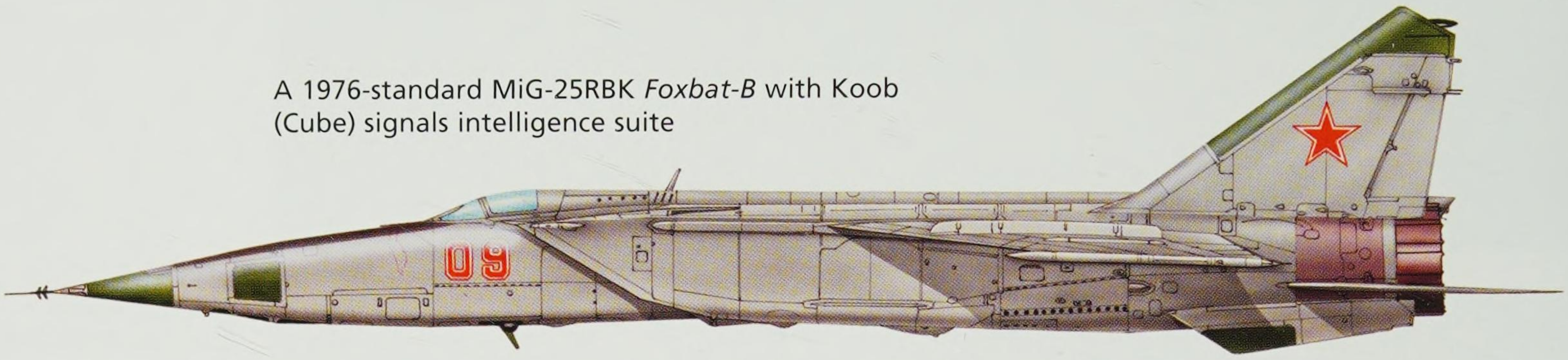
A MiG-25RBS comes in to land.

Foxbats fitted with huge drop tanks on the flight line, with MiG-25RBS '40 Blue' nearest to the camera.

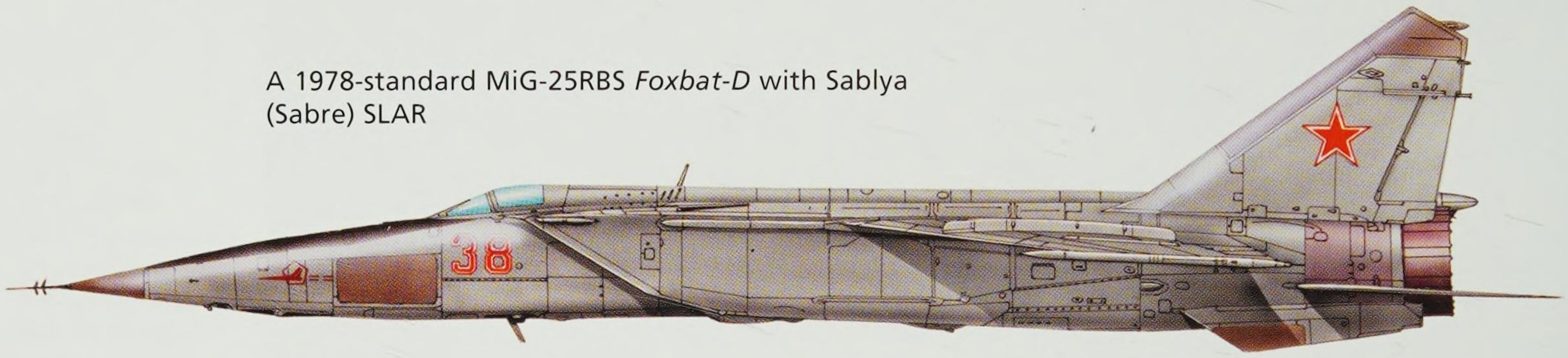
MiG-25R *Foxbat-B* '45 Blue' with A-72 cameras



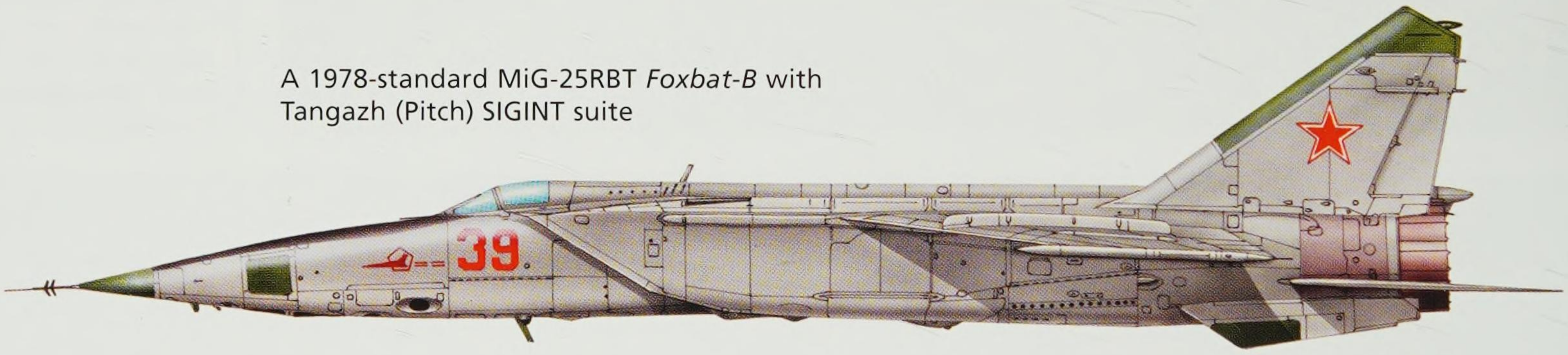
A 1976-standard MiG-25RBK *Foxbat-B* with Koob (Cube) signals intelligence suite



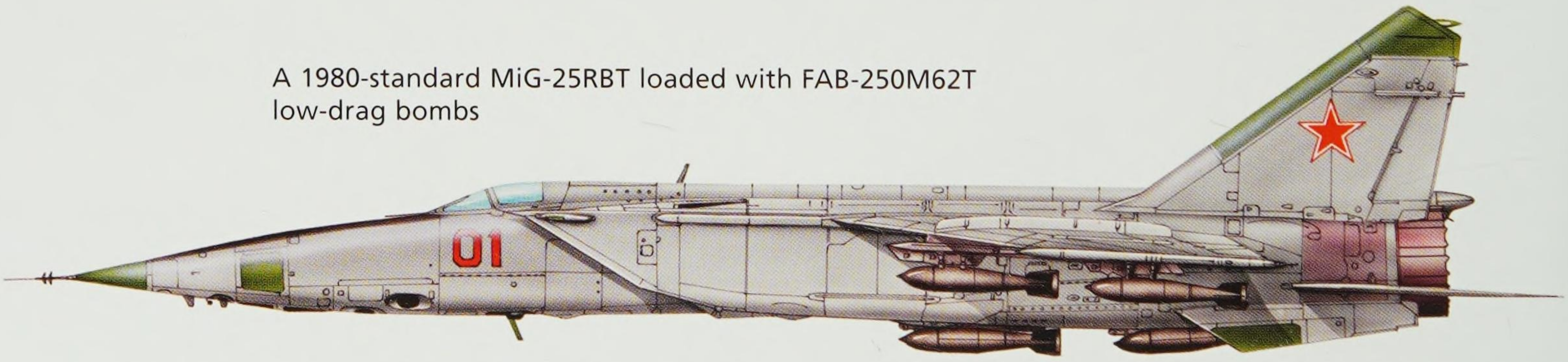
A 1978-standard MiG-25RBS *Foxbat-D* with Sablya (Sabre) SLAR



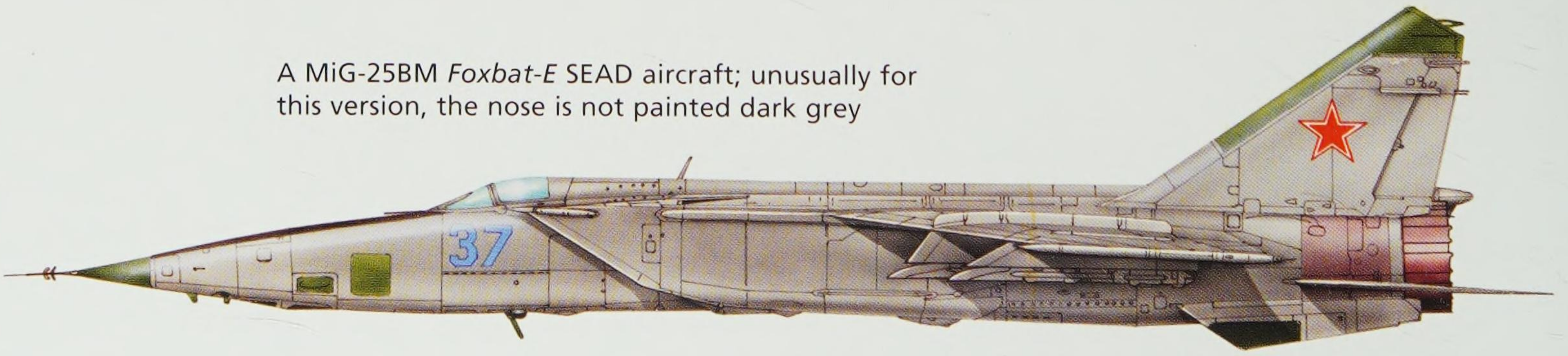
A 1978-standard MiG-25RBT *Foxbat-B* with Tangazh (Pitch) SIGINT suite

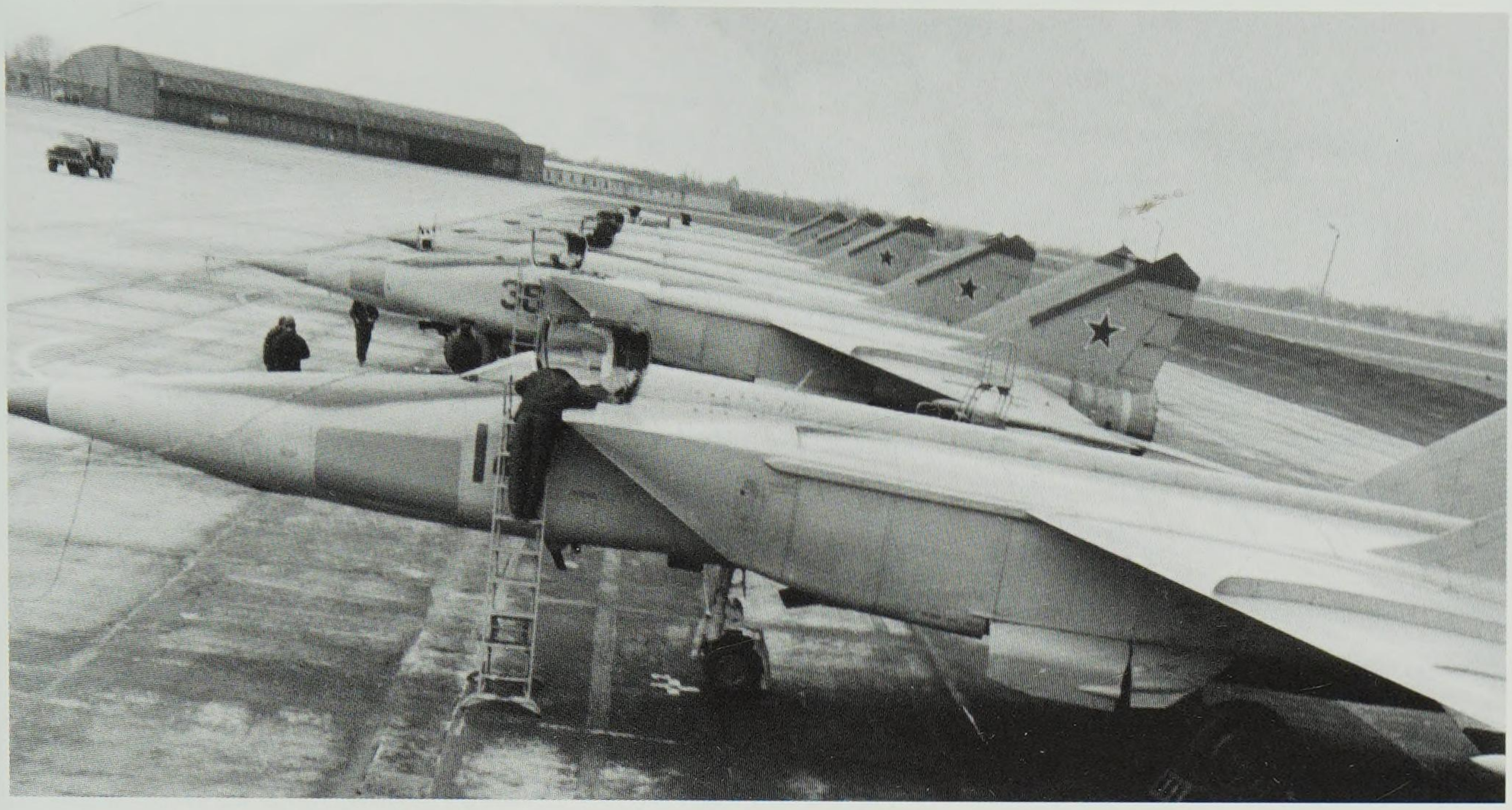


A 1980-standard MiG-25RBT loaded with FAB-250M62T low-drag bombs

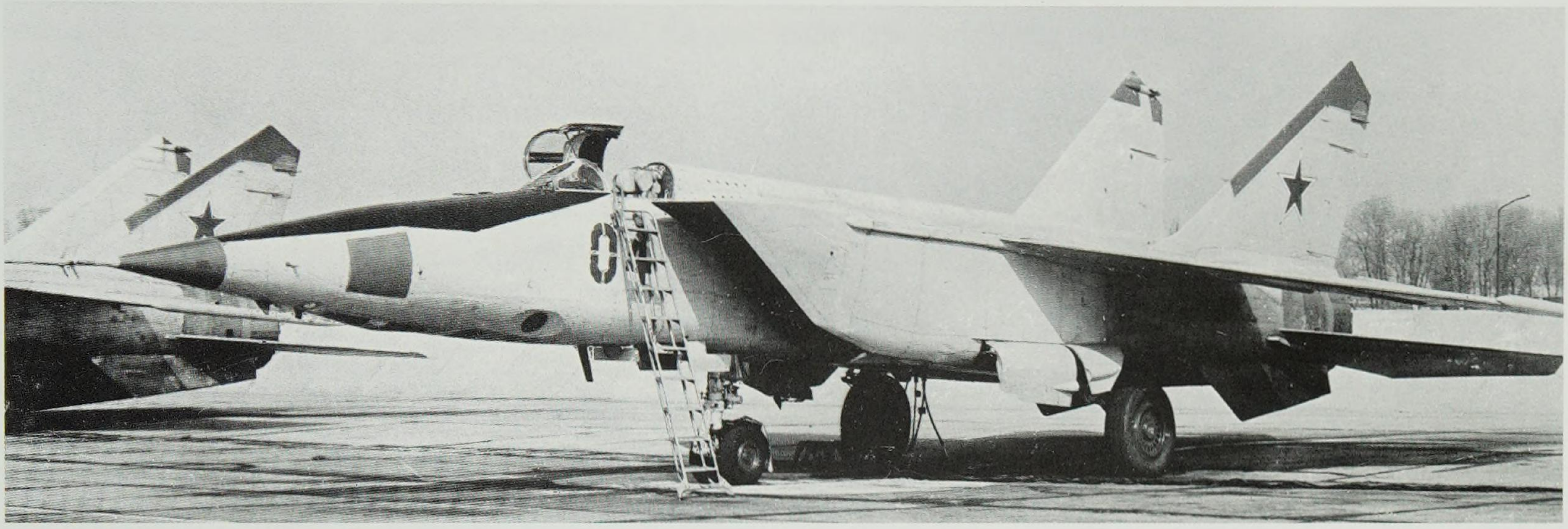


A MiG-25BM *Foxbat-E* SEAD aircraft; unusually for this version, the nose is not painted dark grey

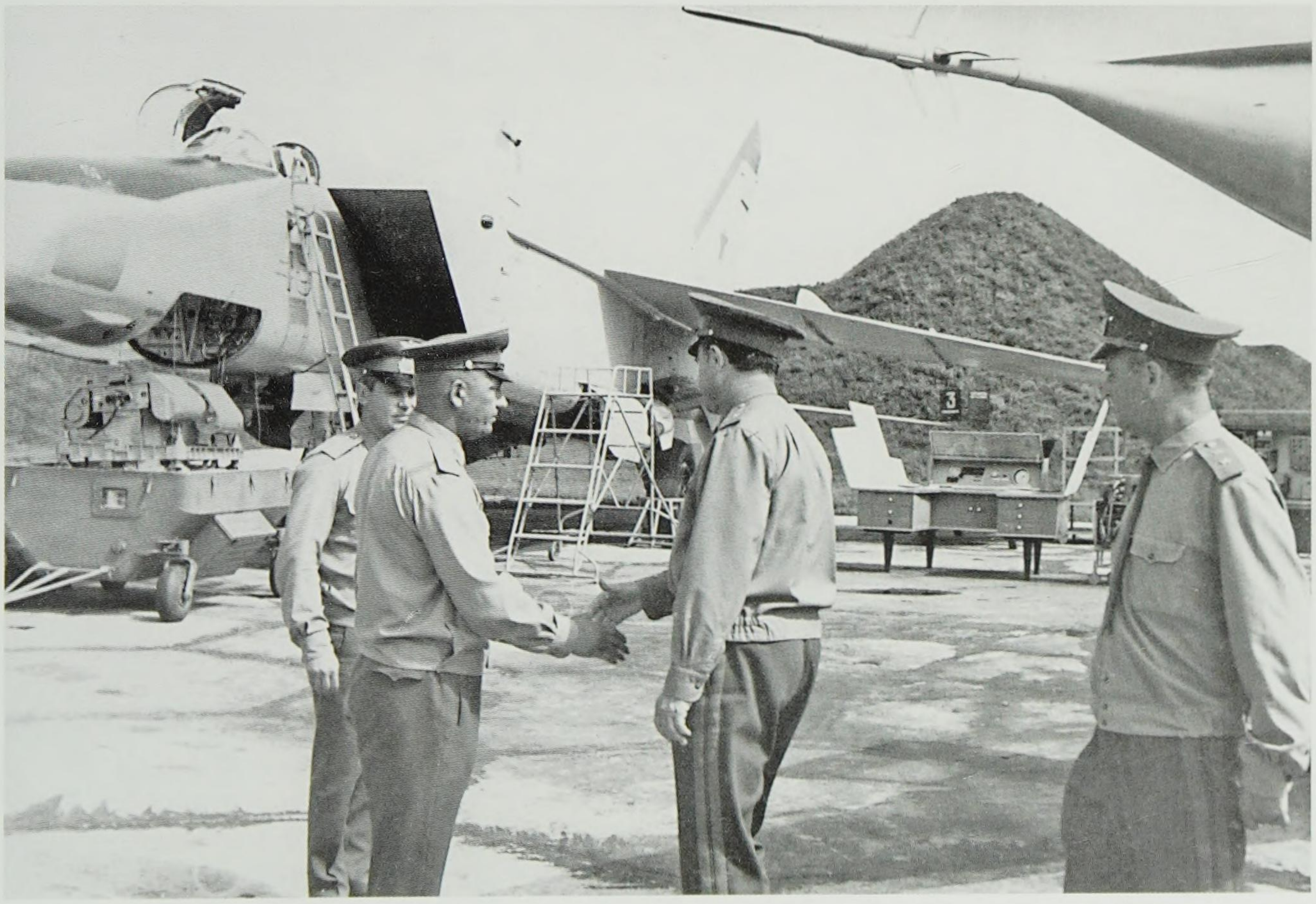




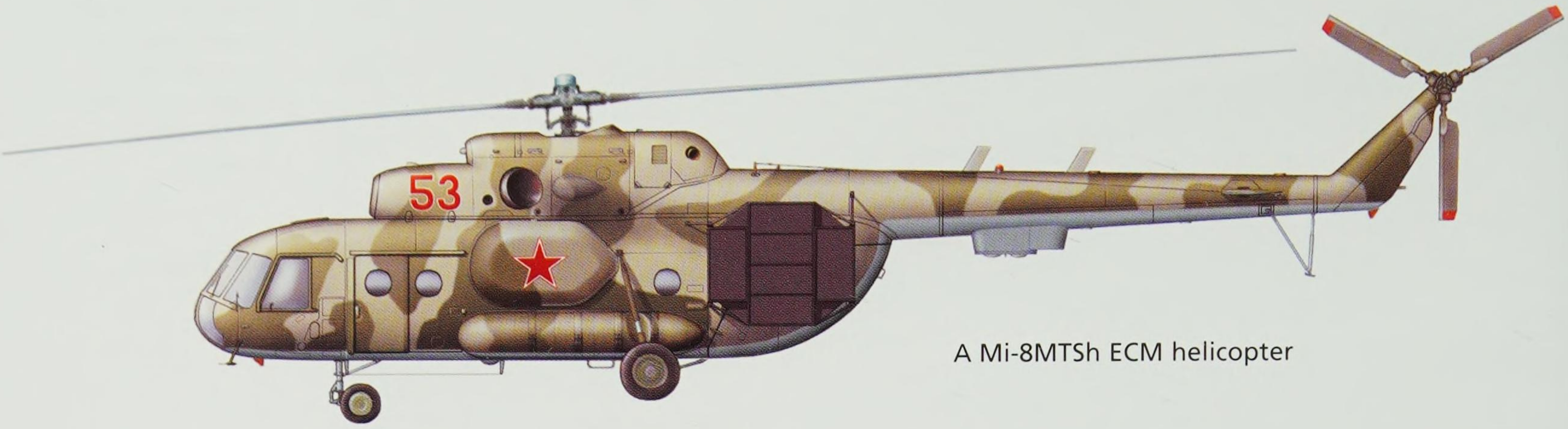
Assorted MiG-25 reconnaissance variants on a flight line, with a MiG-25RBS nearest.



A MiG-25RB shows its camera windows and dielectric panels of the SIGINT suite.



A 47th GvORAP MiG-25RB at Shatalovo AB with the camera pallet detached and placed on a dolly.

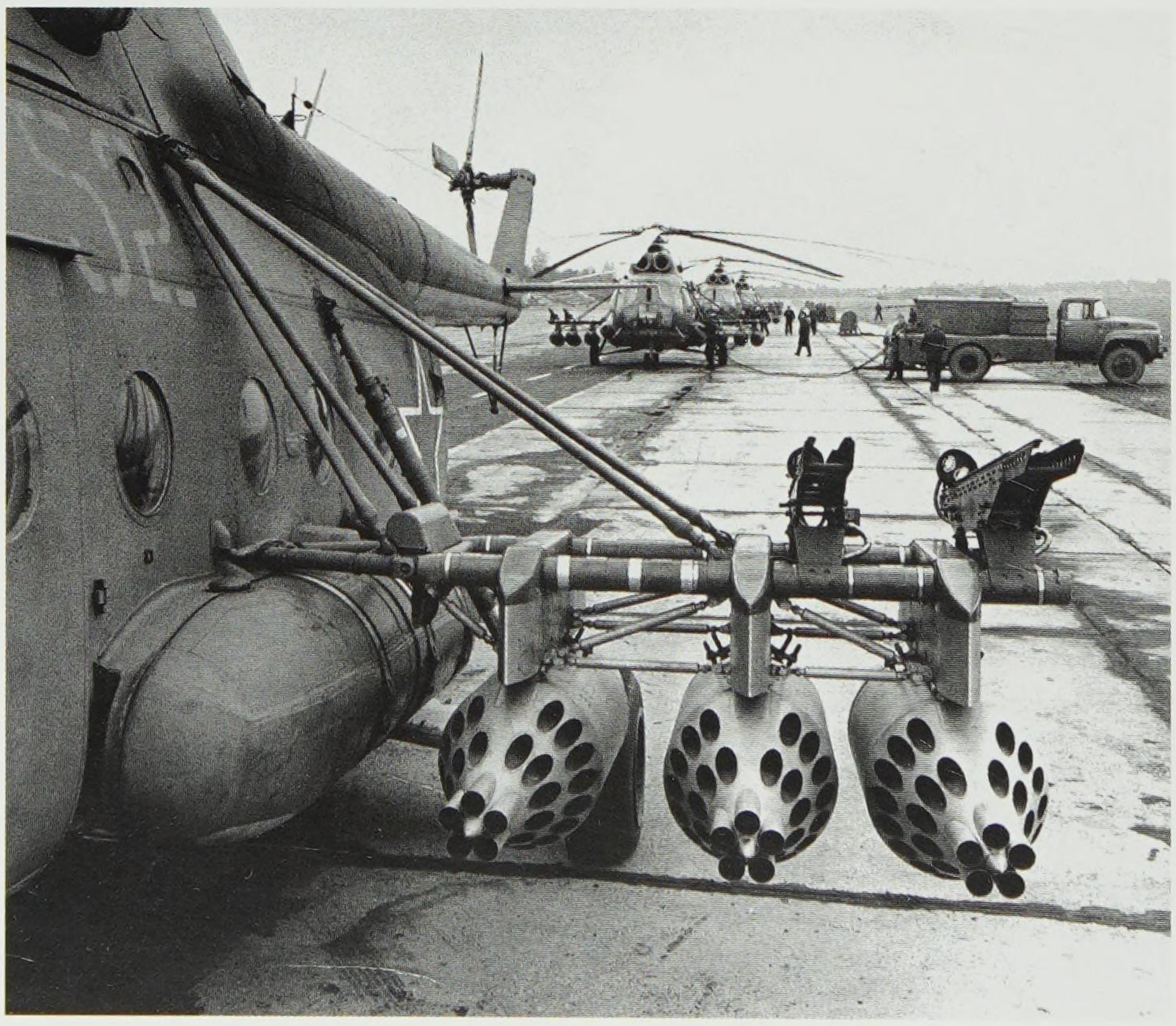


A Mi-8MTSh ECM helicopter

1980s, however, ended in tragedy. A Mi-24 scrambled to intercept an AH-1G which insolently manoeuvred a few hundred yards from the wire mesh fence running along the border. The Cobra pilot was a real pro; following the border at low level, he would repeatedly accelerate and then pitch up sharply, bleeding off speed.

The Mi-24 had a tough time staying on the Cobra's tail, yet the American pilot had met his match and the Soviet crew had no intention of giving up. Once again the AH-1 put on a burst of speed and then pitched up, stopping short within seconds. Determined to stay with the Cobra, the Soviet pilot hauled back on the stick but the big, heavy *Hind* started tumbling down. The pilot did the only possible thing and pushed the stick forward sharply, putting the helicopter into a dive to gain forward speed, but he was too low and had to pull back the stick just as sharply to avoid hitting the ground. Seconds later the main rotor blades struck the tailboom and the helicopter crashed, killing the crew.

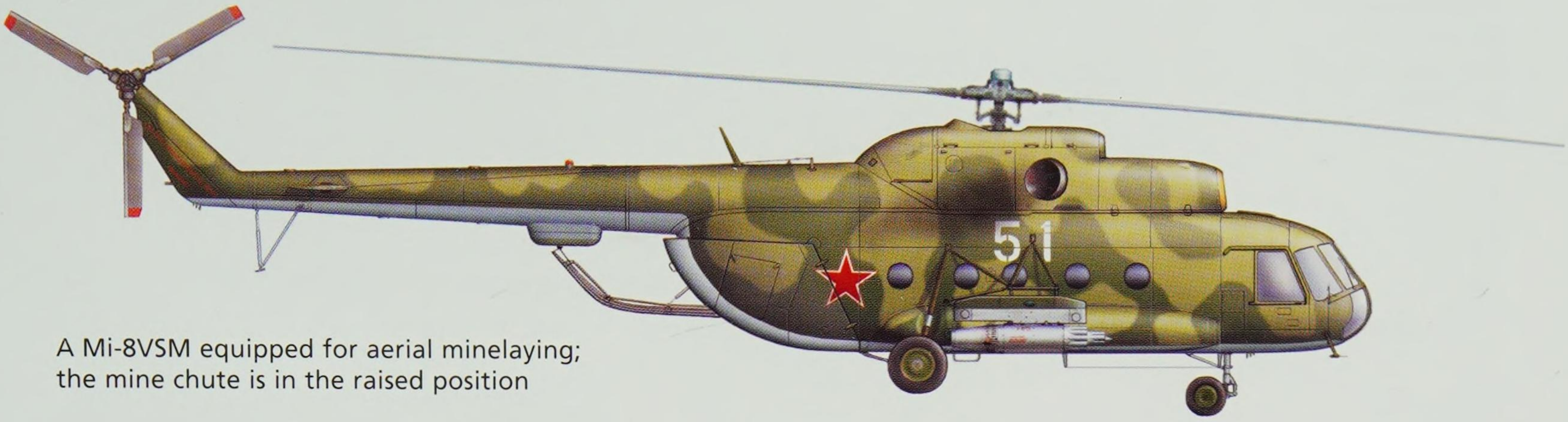
Close-up of the weapons racks on a '1974-standard' Mi-8TV *Hip-E* coded '52 Yellow' with three pylons on each side (carrying UB-32A FFAR pods in this case) and 2P32M launch rails for 9M17P Falanga-P ATGMs.



In the late 1980s the Mil' OKB and the Air Force began experimenting with R-60 (AA-8 *Aphid*) short-range IR-homing AAMs to give the Mi-24 air-to-air capability. The helicopters were retrofitted in service. One of the units involved in testing the R-60 installation was the 1038th TsPLS (*Tsentr pere***oo***chivaniya* ***lyot****novo sos***tah***va* – Aircrew Conversion Centre) in the Turkestan MD. The pilot aimed the R-60s by means of the ASP-17V gunsight, executing a pedal turn to track the target until the missiles' seeker heads locked on. However, mock combat with helicopters fitted with exhaust/air mixers to reduce the heat signature showed that target acquisition range was no more than 600 m (1,970 ft); it was even worse with piston-engined targets. The climate of Central Asia did not help either, as ground temperature reached 60°C (140°F) and decoyed the missiles' seeker heads during nap-of-the-earth (NOE) flying. Hence the R-60 did not find widespread use on the Mi-24.

The *Hind* had a cabin big enough for eight troopers with full kit but was used only sporadically in its envisaged role as a troopship – mostly for inserting/extracting seek-and-destroy commando groups. For example, during Exercise ***Za****pad-81* (West-81) two Mi-24 squadrons from Pruzhany AB dropped off *spets***naz** (Special Forces) groups tasked with seizing bridges and the Blue Force (enemy) airbase's command centres. Each helicopter carried six commandos who disembarked while the Mi-24 was moving at a couple of dozen feet and 50 km/h (31 mph).

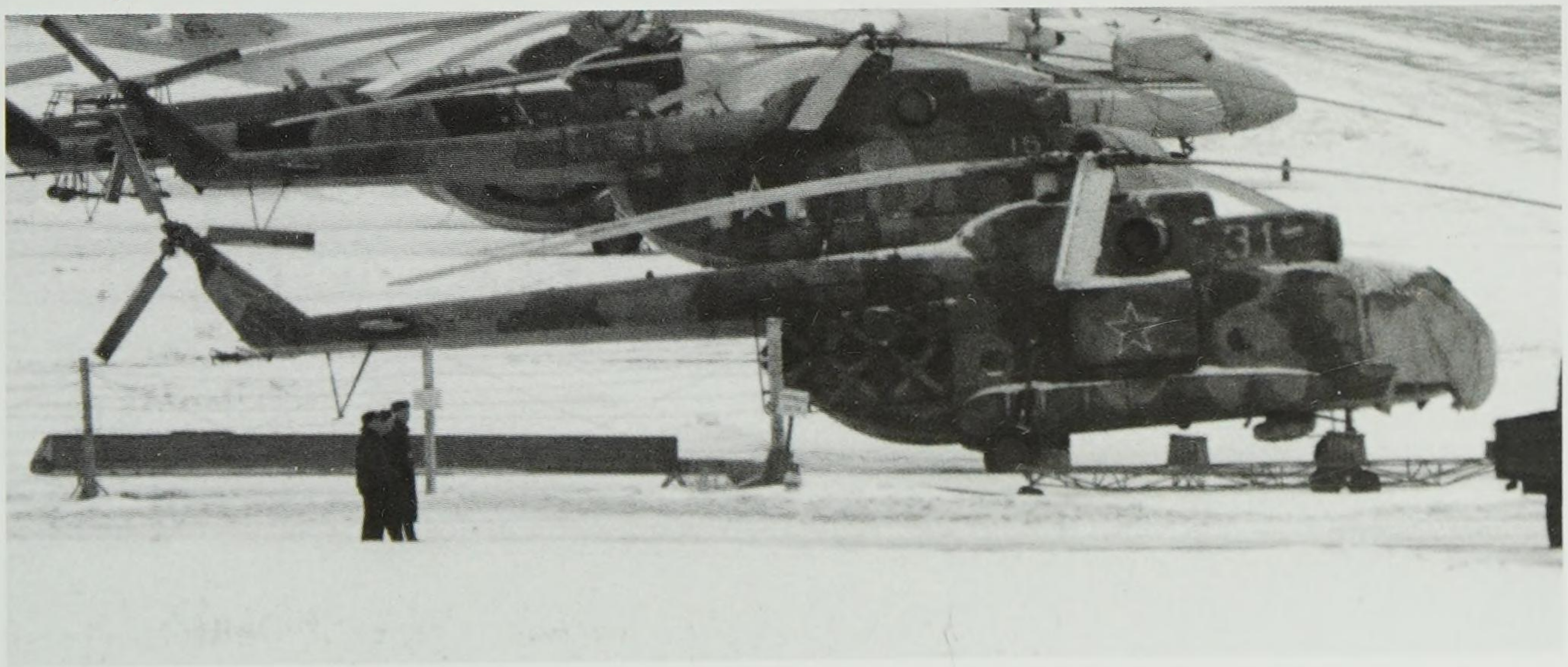
The majority of the Soviet Air Force's Mi-6s served with the independent helicopter regiments reporting to various mechanised infantry or tank armies since the early 1960s. With the advent of the *Hook* these units came to have a mixed inventory: two squadrons flying Mi-6s (12 to 15 machines each) and two



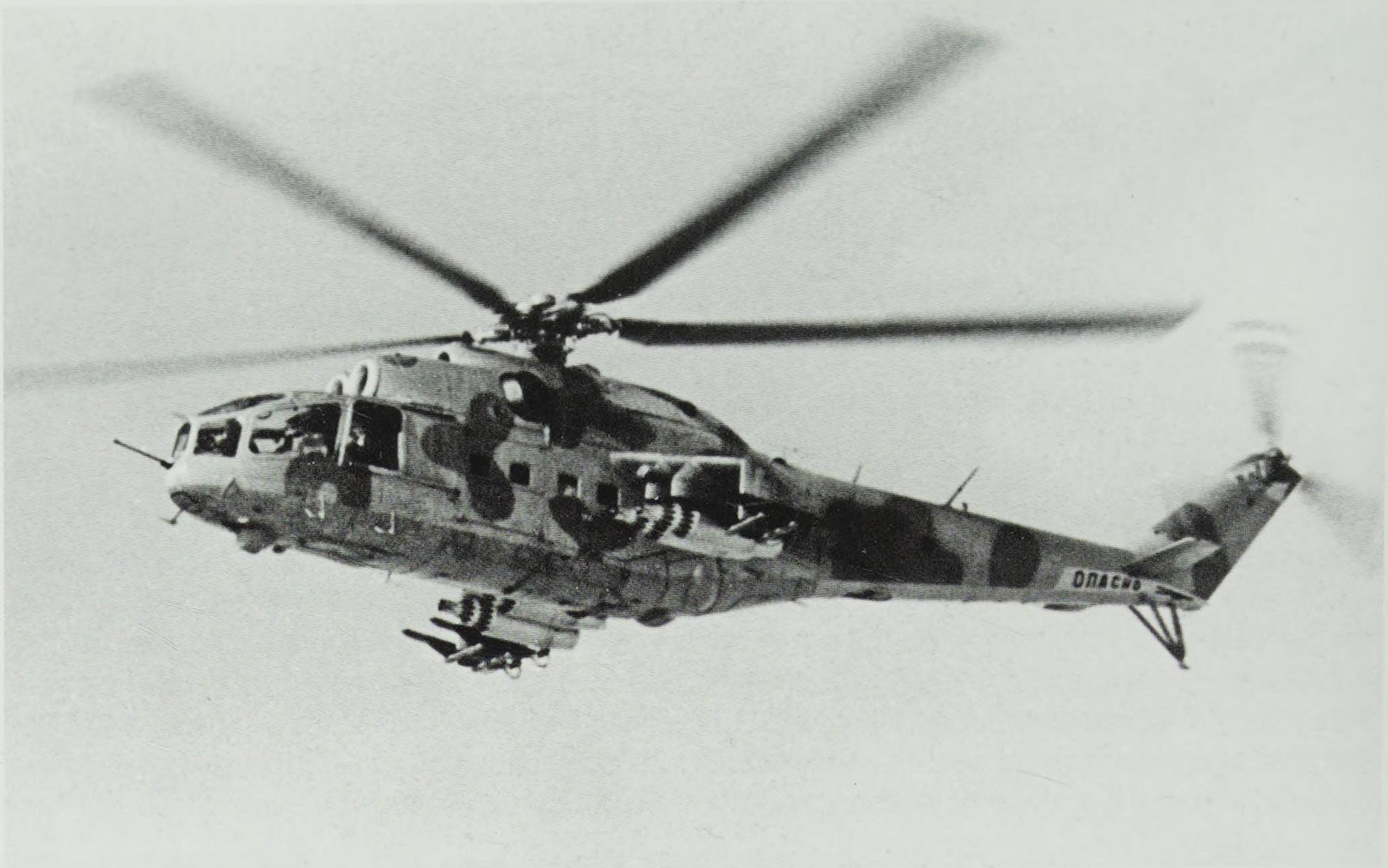
A Mi-8VSM equipped for aerial minelaying; the mine chute is in the raised position

squadrons equipped with Mi-4 *Hound* utility helicopters, and later Mi-8s. As the production of the Mi-6 built up, one such regiment was included into each military district and each group of Soviet forces stationed abroad. For example, the *Hook* saw service the 340th OVP (*ot**del’**nyy verto**lyot**nyy polk* – independent helicopter regiment) at Kalinov (L’vov Region) in the Carpathian MD, the 51st GvOVP at Aleksandriya AB (Kirovograd Region) in the Kiev MD, the 320th OVP at Kherson (Crimea Region) in the Red Banner Odessa MD, the 280th OVP at Kagan (Turkmenistan) in the Central Asian MD and the 181st OVP at

Vertical envelopment in action: soldiers disembark from a Mi-8MT hovering a few feet above the ground. The helicopter carries a pair of FFAR pods.

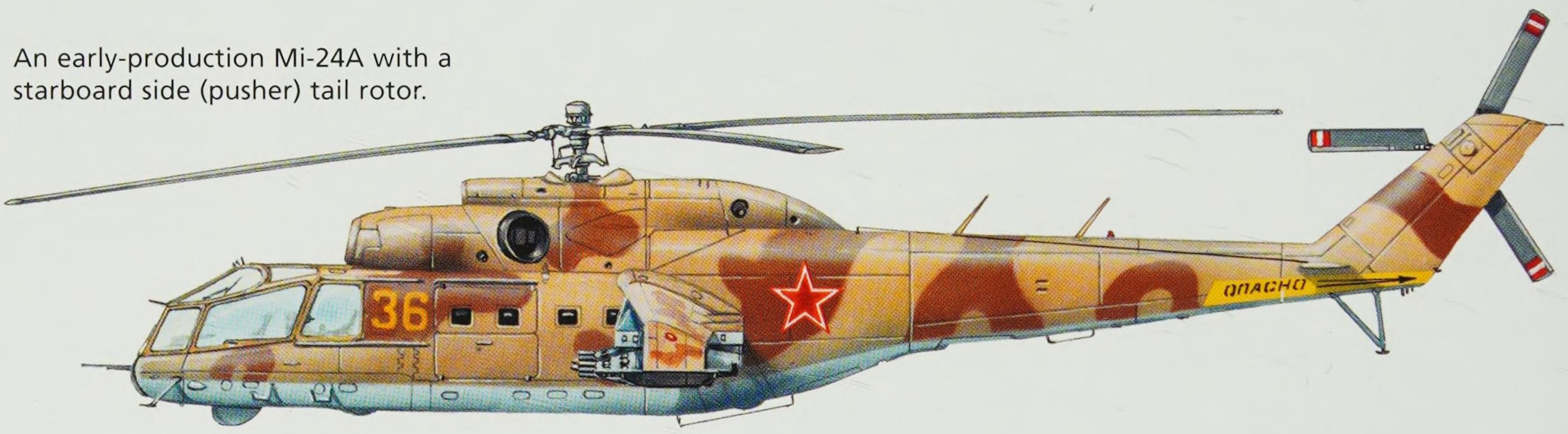


A gaggle of Soviet Air Force/16th VA special mission *Hips*, including a Mi-8PPA and a Mi-8SMV.

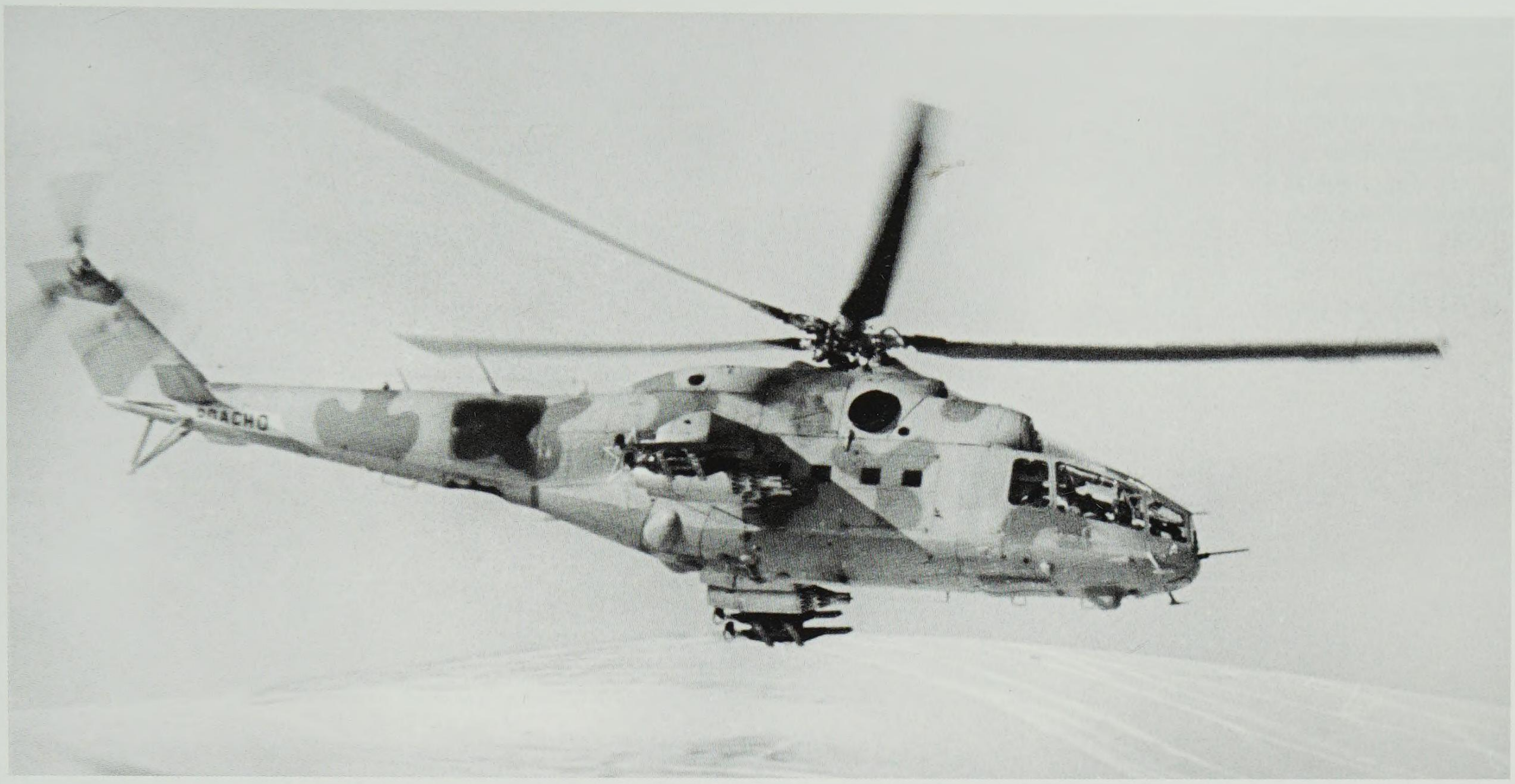


A late-production Mi-24A with a port side (tractor) tail rotor.

An early-production Mi-24A with a starboard side (pusher) tail rotor.



A pair of early Mi-24As armed with FFAR pods in low-level flight.



This Mi-24A has had the tactical code overpainted for some reason.

Dzhambul (southern Kazakhstan) in the Turkestan MD.

The Mi-6 also served with independent air squadrons and composite air regiments which supported the functioning of headquarters of military districts, air armies and groups of Soviet forces abroad. Such units operated a mix of transport and special-purpose aircraft and helicopters. As a rule, their complement included one or two Mi-6VKP or Mi-22 command posts, sometimes supplemented by an equal number of the transport version of the *Hook*. For example, the 456th GvOSAP (*Gvar**dey**skiy ot**del'**nyy **smesh**annyy **a**vi-a**polk*** – Independent Guards Composite Air Regiment) at Gavryshevka airfield near Vinnitsa had a Mi-22; the 296th OVE (*ot**del'**naya verto**lyot**naya eskad**ril'**ya* – Independent Helicopter Squadron) at Mahlwinkel AB, Germany, had two Mi-6VKPs at its disposal.

The pilot of a Mi-24D shares his experience with his colleagues at an Army Aviation airfield.

Early-production 234th GvIAP MiG-29s make a low pass in Vee formation. The ventral fins have been removed but the fighters retain the early-style nose gear doors.

The Mil' 'big lifters' were also operated by search and rescue units stationed in the designated areas where the re-entry capsules of Soviet manned recoverable spacecraft landed after returning from orbit. These were an air detachment in Aral'sk (Kazakhstan), squadrons in Cheben'ki (Orenburg Region, Russia) and Karaganda (Kazakhstan), and a regiment in Troitsk near Kustanai (Kazakhstan).

Mass deliveries of the Mi-6's successor – the Mi-26 *Halo* – to the Army Aviation did not start until May 1985. In that month two machines were delivered to the 162nd OTBVP (*ot**del'**nyy **trahns**portno-boye**voy** verto**lyot**nyy polk* – Independent Transport/Combat Helicopter Regiment) which was assigned to the Central Asian MD. That same year the 373rd OTBVP stationed at Kyakhta (Transbaikalian MD) and the 325th OTBVP stationed at Tselukidze (Transcaucasian MD) received their first Mi-26s. Later the new helicopters were also delivered to the 793rd OTBVP (Telavi, Transcaucasian MD), the 340th Air Regiment (Kalinov, Carpathian MD) and some other units, including the air units of the Ministry of Interior. In every regiment the new helicopters were put on the strength of two squadrons, each of which had a complement of 12-14 helicopters; the remaining squadrons continued operating Mi-6s or Mi-8s.

Full-scale service tests of the Mi-26 were conducted in the 793rd OTBVP in 1988-89. In all, in the course of 13 months the crews logged 1,414 flying hours; on a number of occasions the crews had to perform flights over the Major Caucasus Ridge, climbing to an altitude in excess of 4,500 m (14,800 ft).

As mentioned earlier, the mid-1980s marked the beginning of a new era in the history of the Soviet Tactical Aviation, which started taking delivery of the MiG-29 and Su-27 fourth-generation fighters.

In typically Soviet style, the MiG-29 achieved IOC several months before the State commission signed the Act of acceptance formally clearing the fighter for service. The first unit to receive the production MiG-29 (*izdeliye* 9.12) *Fulcrum-A* fighter was the 455th IISAP (*in**strook**torsko-ispy**tah**tel'nyy **smesh**annyy*

A 234th GvIAP pilot climbs into the cockpit of his MiG-29.

A typical publicity shot of two pilots discussing the merits of their new MiG-29s. This is a very early aircraft with narrow-chord rudders and ventral fins. Note the star on the pilot's helmet – an uncommon occurrence.

*avia**polk*** – Instructional & Test Composite Air Regiment) of the 4th Combat TsBP i PLS in Lipetsk. The Centre's main objective for 1983 had been determined as training the pilots of the 234th GvIAP from Kubinka AB and the 968th *Sevastopol'skiy* IAP to fly the MiG-29. The 4th TsBP i PLS was followed shortly afterwards by the 760th Training Centre based in nearby Voronezh; between them these two units took delivery of the first 37 operational *Fulcrum-As*.

In 1983 the first MiG-29s of the prescribed complement of 36 were delivered to the abovementioned 968th IAP – a unit of Great Patriotic War fame awarded the Red Banner and Suvorov (3rd Grade) Orders. This unit was then part of the 26th VA/95th IAD and was based at Ross', Belorussian MD. Thus it was the first operational unit to master Mikoyan's fourth-generation jet (the 234th GvIAP, as already mentioned, was a 'showcase unit'). It is a little-known fact that the 968th IAP was the first regiment to re-equip completely with fourth-generation fighters, and it was there that the MiG-29's evaluation took place.

On the southern borders of the Soviet Union, the 176th GvIAP based at Mikha Tskhakaya AB (part of the 34th VA headquartered in Tbilisi) became the first unit to re-equip, receiving 35 *Fulcrums*. This unit gained unwelcome publicity due to the widely known (and only) case when a MiG-29 was flown to Turkey by a defector on 20th May 1989.

Next, the new MiGs appeared in the Carpathian MD, entering service with the 145th IAP of the 14th VA at Ivano-Frankovsk, western Ukraine, and the 119th IAD of the 5th VA headquartered at Tiraspol', Moldavia. The 119th Division comprised two regiments: the 86th GvIAP based at Markuleshty AB, Moldavia, and the 161st IAP based at Limanskoye AB on the Crimea Peninsula, the Ukraine.

As for the Su-27, it was likewise delivered initially to the 234th GvIAP, equipping a single squadron. However, the honour of being the first operational unit to operate the *Flanker* was accorded to the 831st *Ga**lats**kiy* GvIAP (so named for the taking of the Romanian city of Galați during the Great Patriotic War) in

A 234th GvIAP pilot discusses flight details with his colleague sitting in a MiG-29. Note the triple rear view mirrors on the canopy frame.

A Su-25 pilot poses in front of his mount. Again, the helmet is adorned with a red star.

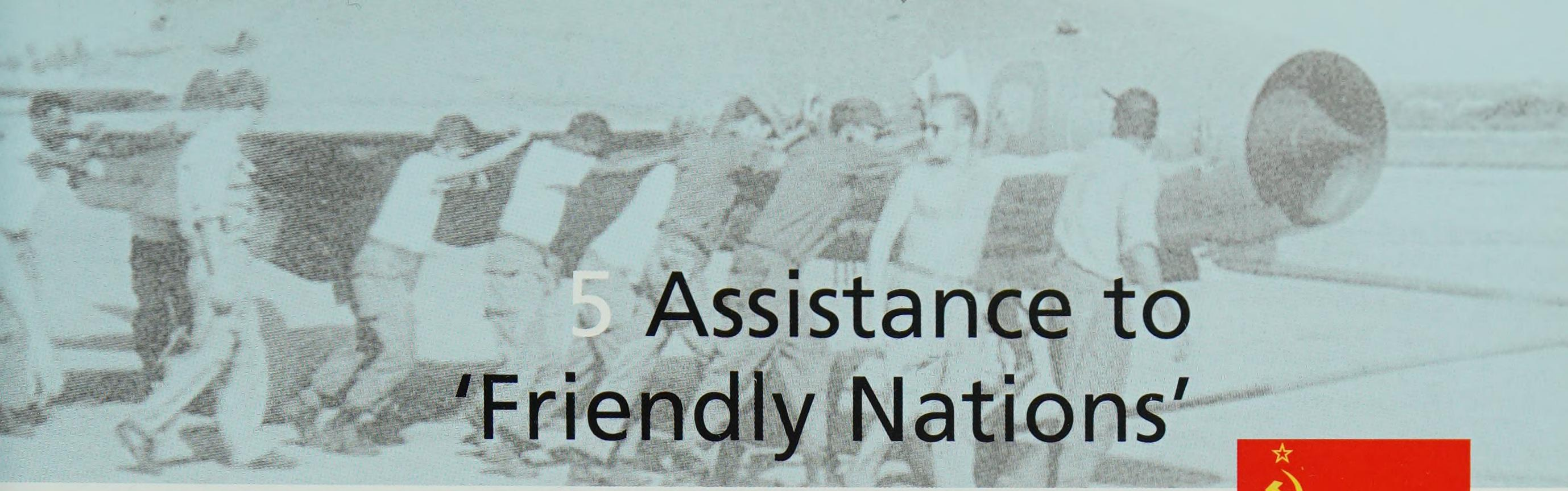
Mirgorod, the Ukraine. The first six fighters were delivered in the autumn of 1985, followed by 22 more during the first six months of 1986 and a further six in the autumn of 1986. In early 1987 the 216th IAP was established at Orlovka AB in the Far East as part of the Air Force's 1st VA with a complement of thirty Su-27s. The introduction of new hardware required a major reconstruction of the airbase, and the personnel of the 216th IAP had to master their new mounts at Komsomol'sk-on-Amur/Khoorba airport. Before long, however, the VVS command decided that the unit should permanently redeploy to Khoorba; the move was completed by mid-1988.

In 1981 the airbase in Sital-Chai, Azerbaijan (Transcaucasian MD), became home to the first operational unit equipped with Su-25 *Frogfoot* attack aircraft – the 80th OShAP (*ot**del'**nyy shtoormo**voy** a**via**polk* – Independent Attack Air Regiment). Thus was reborn the Attack Aviation which had been abolished in the 1950s. Since the regiment had been established before the first production Su-25s became available, the ground crews had had no opportunity to take appropriate training and the service introduction period was accompanied by difficulties. The 80th OShAP command staff, flying personnel and ground personnel went to Lipetsk to take theoretical training at the 4th TsBP i PLS; afterwards, the training continued directly at the Tbilisi Aircraft Factory producing the single-seat *Frogfoot-A*.

Upon receiving the first batch of Su-25s the pilots commenced flight training; the Su-25UB *Frogfoot-B* trainer did not exist yet, and the Su-17UM *Fitter-E* had to serve as a stand-in. To complicate things further, the pilots for the 80th OShAP had been gathered from far and wide, transferring from units that had operated such varying aircraft as the Su-15 *Flagon* interceptor, the Su-17, the MiG-21 and the MiG-23. All of these types differed markedly in handling and piloting techniques from the Su-25, which certainly did not help, however easy the *Frogfoot* might have been to fly. One more spanner in the works was the financial aspect; due to different pay rates for subsonic and supersonic aircraft pilots Su-25 pilots earned less than their colleagues flying fast jets, which was certainly a disincentive for those converting to the attack aircraft. At the start of the type's career there were many cases when Su-25s were put out of action by the improper actions of the pilots who still were not fully proficient.

What made the airmen change their attitude toward the Su-25 was the Afghan War in which the *Frogfoot* left a huge footprint, so to say (see Chapter 7). In due course the sturdy and very capable attack aircraft became very popular with the Air Force. Moreover, it turned out to be one of the longest-lasting Soviet fourth-generation combat aircraft – it still renders sterling service with the Russian Air Force, thanks to a mid-life upgrade programme. Attack air regiments flying the Su-25 were stationed all over the Soviet Union and in East Germany. The reinstatement of these units gave a major capability boost to the Tactical Aviation, allowing it to tackle armoured vehicles with success.

Summing up this chapter, we may say that, despite the damage done by Khrushchov's cuts, in the 20 years that followed Khrushchov's deposal in the autumn of 1964 the Soviet Air Force not only regained its former strength but increased it many times over. This was due both to increased aircraft fleets and to the introduction of qualitatively new hardware. The Cold War and the arms race was a major factor in this, as was the Soviet government's wish to have the most potent and combat-capable air arm in the Warsaw Pact.



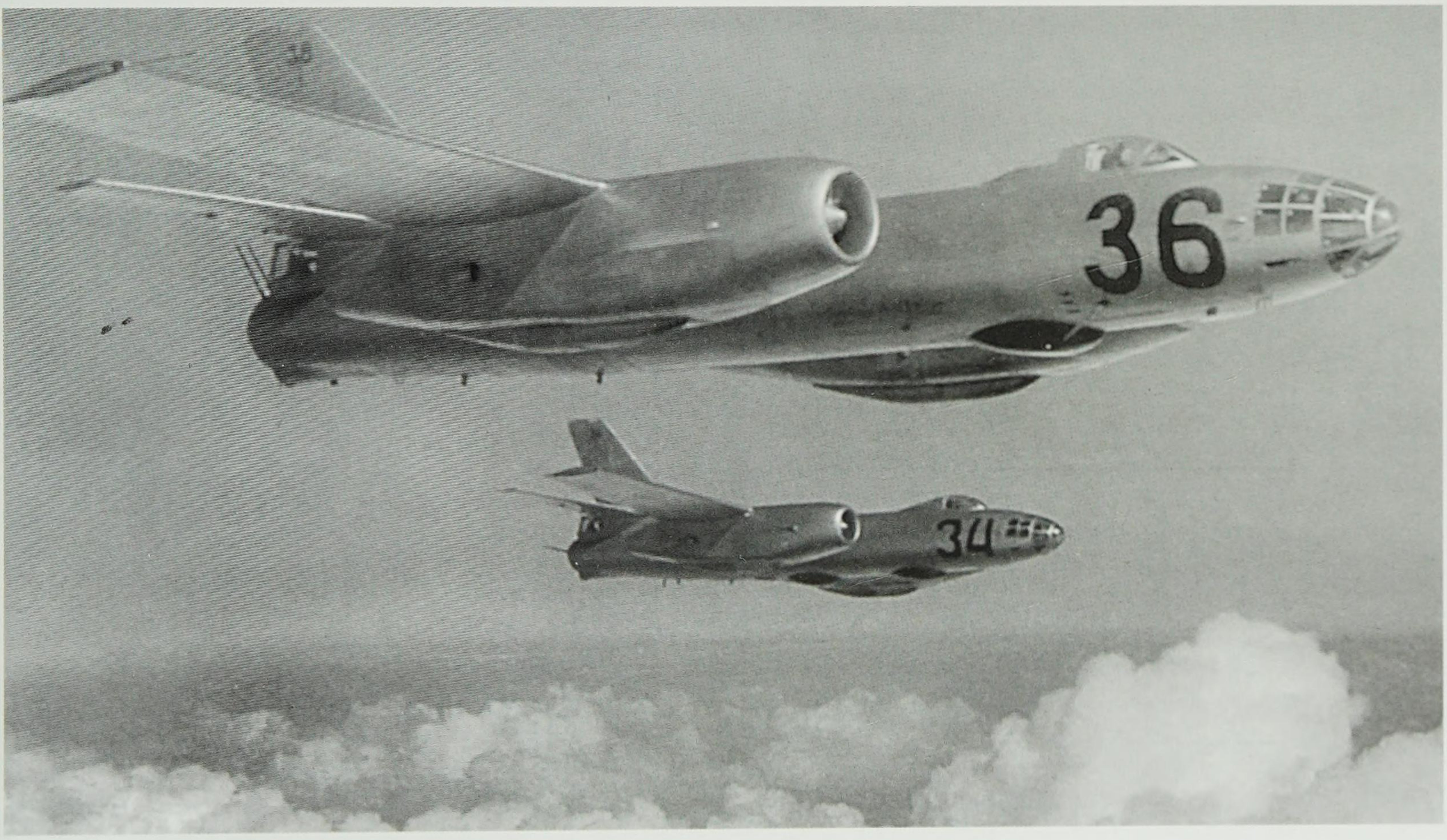
5 Assistance to 'Friendly Nations'

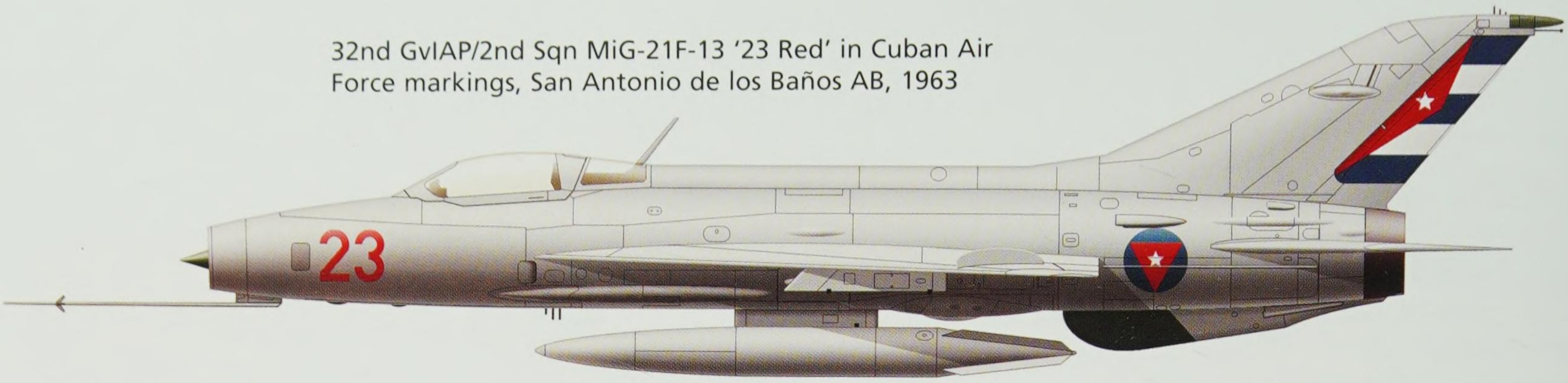
In addition to defending the homeland frontiers, the Soviet Air Force was sometimes called upon to provide assistance to countries within the Soviet sphere of influence – usually 'third world' countries that had chosen the socialist system. This did not necessarily mean participation in 'secret' wars like the Korean War and the Afghan War; quite often the Soviet Union assisted the new 'people's democracies' in building up or re-equipping their air forces.

This was the case with Indonesia, where an uprising against Dutch colonial rule took place in August 1945, sparking a four-year liberation war (the Netherlands recognised the country's independence in 1949). The Soviet Union established diplomatic relations with Indonesia in 1950 and began providing military assistance. This was not limited to deliveries of military hardware (including aircraft). A large order for Soviet arms placed in 1961 included 20 MiG-21F-13 *Fishbed-C* tactical fighters. However, since the pilots of the Indonesian Air Force (AURI – *Angkatan Udara Republik Indonesia*) had not yet mastered the type, Soviet pilots were called upon to perform combat duty for a while.

In the early summer of 1962 the Soviet Air Force's 32nd GvIAP commanded by Maj. Yu. Yu. Nemtsevich and based at Kubinka AB near Moscow was assigned temporary duty in Indonesia. At a briefing in early July, the Moscow Military District aviation commander Col.-Gen. Yevgeniy M. Gorbatyuk tasked the unit's personnel with preparing for what was euphemistically described as 'flight training overseas'. The operation was top secret. The chosen personnel were vetted by the counterintelligence service, underwent stringent medicals and were inoculated. The regiment was brought up to full strength, operating 40 MiG-21F-13, as well as six UTI MiG-15 *Midget* trainers and a Yak-12M liaison aircraft.

The regiment's Squadron 2 led by Maj. A. M. Yelisyev, which was earmarked for the deployment, was reinforced with aircrews and ground crews from the regiment's other squadrons. On 10th-13th July 1962 the squadron conducted live weapons training at the firing range, attacking aerial and ground targets. The technical staff left for Indonesia that same month, travelling in an Il'yushin IL-18 *Coot* airliner from Moscow-Sheremet'yevo airport to





32nd GvIAP/2nd Sqn MiG-21F-13 '23 Red' in Cuban Air Force markings, San Antonio de los Baños AB, 1963

Previous page: IL-28 bombers similar to these were deployed to Cuba and were one of the reasons for the Cuban Missie Crisis.

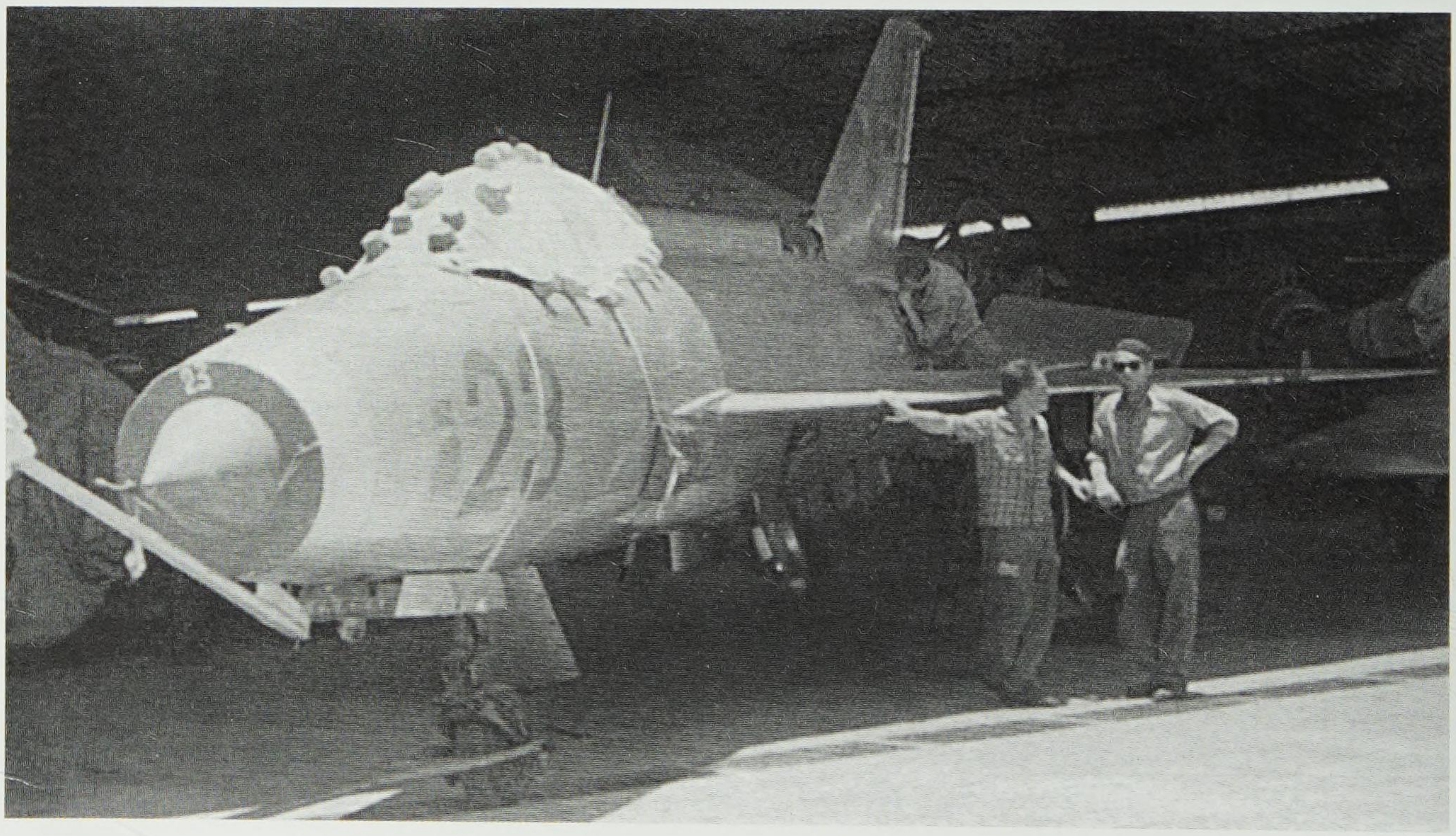
Jakarta via Tashkent, New Delhi and Rangoon. The airmen followed suit on 1st August, arriving the following day. To make up for the depletion caused by the detachment to Indonesia, the regiment was augmented back to full strength with flight and ground crews from a fighter regiment stationed at Beryoza AB in Belorussia.

The fighters were shipped in crates aboard Soviet cargo vessels. At Jakarta airport they were reassembled and check-flown, whereupon the squadron redeployed to Madiun airfield. From there, the squadron provided air defence coverage to the port of Surabaya, the main base of the Indonesian Navy, by flying CAP missions by pairs of MiG-21F-13s armed with two R-3 missiles. The fighter utility rate was low, two or three sorties a day, but even this was a sore trial for the pilots in the tropical climate. The ground crews were having a hard time too; the fighters sat in hangars with galvanised iron roofs and the temperature inside exceeded +40°C (104°F). Conversion training of Indonesian flight crews was being conducted at the same time.

The 32nd GvIAP's deployment in Indonesia continued until 22nd September 1962. Before going home in October, the squadron handed the aircraft over to the Indonesians, who fielded them with the 14th Sqn of the AURI.

This tour of duty had hardly ended when the 32nd GvIAP deployed overseas again – this time to Cuba along with other Soviet troops as part of Operation Anadyr'. After the 1958 revolution which toppled the Batista regime, many of the ex-dictator's supporters had fled to the USA; the US-backed Bay of Pigs invasion had failed, but a new counter-revolutionary attack seemed more than probable. Thus, 43,000 Soviet personnel and various weapons were deployed to the island in August-September 1962, forming the Group of Soviet Forces in Cuba.

In mid-September 1962, after a two-week voyage from the Soviet seaport of Baltiysk, the freighter M/V *Nikolayevsk* docked at La Isabella, carrying crated MiG-21F-13s, as well as 32nd GvIAP flight and ground personnel. Once in Cuba, the regiment came under the operational control of the Cuban Armed



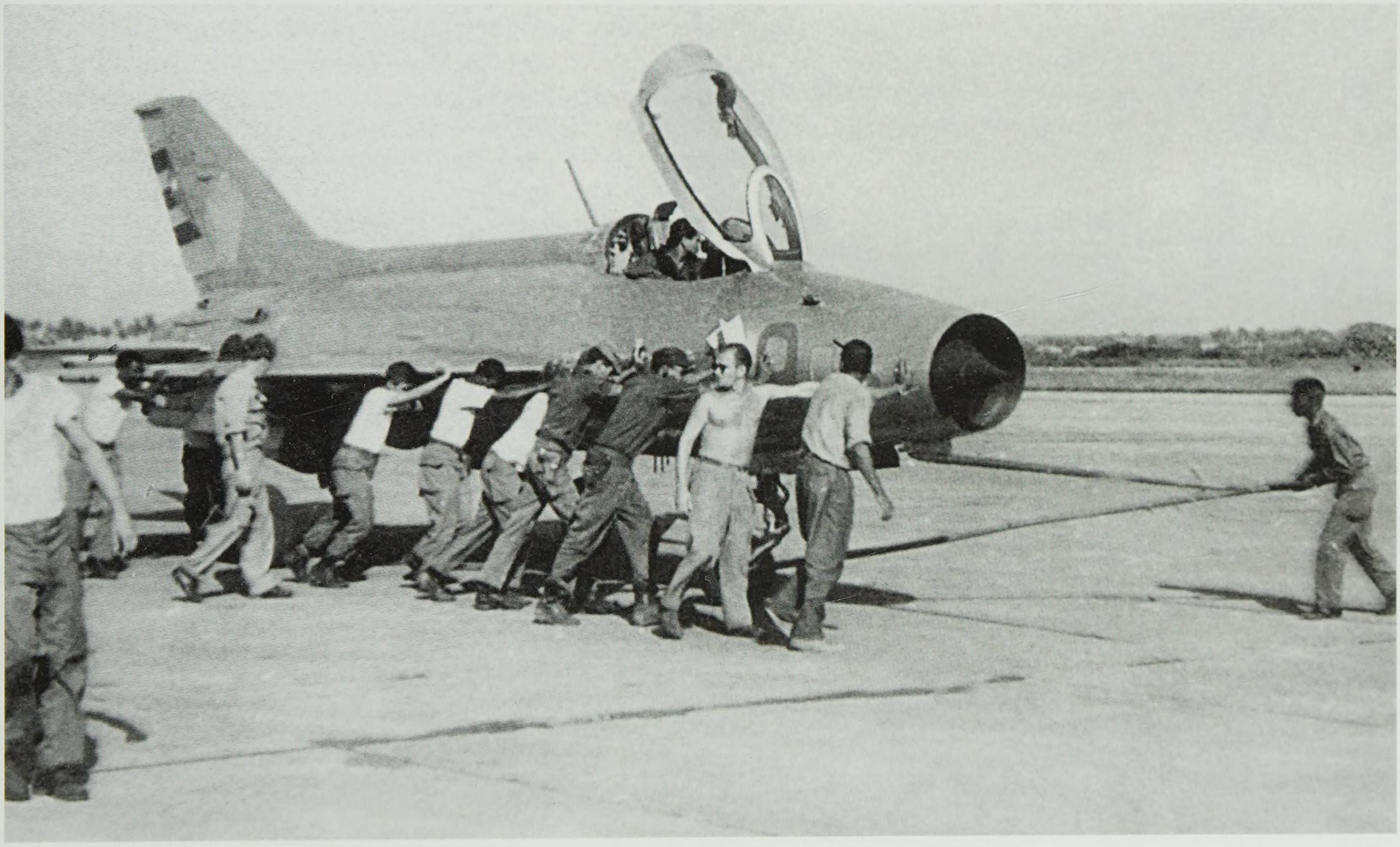
32nd GvIAP/2nd Sqn MiG-21F-13 '23 Red' undergoes maintenance at San Antonio de los Baños AB in 1963.

32nd GvIAP pilots in civilian clothes pose beside a Cuban Air Force MiG-21F-13 on QRA duty, November 1962.

Forces' 12th Air Defence Division. Its temporary new home was the US-built airbase at Santa Clara in the middle of the island, which enabled it to control the airspace over central Cuba. The airbase already hosted a Cuban Air Force squadron flying MiG-15*bis* fighters.

The crates were trucked with police escort from the port to Santa Clara AB, where a special area was designated for reassembly. Assembling the fighters proved to be a backbreaking job; at first, the ground crews had handled the assembly work alone, but later the pilots joined in as well. More problems followed: the first engine runs resulted in fires because the engines' starting system had not been adjusted to the hot and humid climate.

Cuban ground personnel manhandling a MiG-21F-13 after a solo flight by a Cuban pilot.



Fuel leaks appeared because the rubberised fabric of the bag-type tanks had deteriorated during the journey, and replacement items had to be procured urgently. At first the MiG-21s were parked in the open, while the resident Cuban MiG-15s were hidden in dispersed concrete shelters; however, the activity of US Air Force reconnaissance aircraft led the Soviet command to stash the MiG-21s into the shelters instead of the Cuban fighters.

The activity of the USAF around Cuba required the Soviet pilots to start flying as soon as possible. At the time, no production MiG-21U *Mongol-A* two-seaters were available, and the six UTI MiG-15 *Midget* trainers were the last to arrive in Cuba. In that situation, Col. N. V. Shibanov, the regiment CO, ordered that operations be started without waiting for the trainers to arrive. The first 32nd GvIAP MiG-21F-13 mission from Cuba was flown on 18th September, and the regiment was placed on alert duty by the end of the month.

The first alert came barely a month later, on the night of 22nd October, when US warships were reported to be heading towards Cuba; war could break out at any moment. In pitch darkness the pilots awaited orders to scramble; the fighters carried two drop tanks and two unguided rocket pods each. Fortunately the alert was called off late that night.

The regiment's dispersal was ordered on 24th October 1962. Sqn 1 and the command element remained in Santa Clara, while Sqn 2 redeployed to San Antonio de los Baños AB near Havana and Sqn 3 went to Camagüey airfield in the eastern-central part of Cuba. A pair of MiG-21F-13s would be on quick-reaction alert (QRA) duty in the daytime at each air base and one fighter with the most seasoned pilot in the squadron at night.

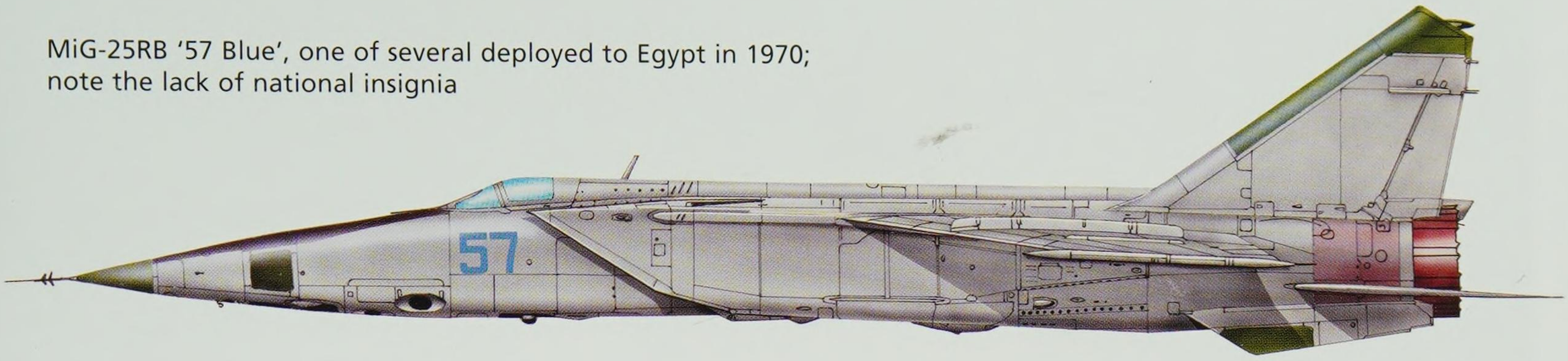
The pilots practiced combat operations, formation cohesion and co-operation with Cuban MiG-15s and MiG-19s. At first, the *Fishbeds* were devoid of markings (the Soviet insignia were painted out). USAF fighters flew over San Antonio de los Baños on a daily basis. On 4th November a pair of American fighters popped up over the base in the midst of the day's flights. A single MiG-21F-13 was airborne at the moment, and the flight operations officer ordered the pilot to make an offensive manoeuvre without actually opening fire. As soon as the Americans saw a MiG-21 on their tails, they immediately engaged full afterburner and made off. That did the trick; there were no more overflights. US radio broadcasts reported, *'US aircraft have been attacked in the skies over Cuba by air pirates in unmarked aircraft'*. This prompted the application of Cuban insignia on all 32nd GvIAP MiGs overnight.

In February 1963 the regiment was tasked with converting the Cuban personnel to the MiG-21. The conversion training took place at San Antonio de los Baños AB, the largest Cuban airfield with three concrete runways about 3 km (1.86 miles) long and a developed infrastructure. The conversion of the Cubans was completed without incident by midsummer, with about 30 pilots and all ground crews trained in flying and maintaining the MiG-21. With the 'flight training mission' in Cuba accomplished, the personnel of the 32nd GvIAP returned home, again ceding their fighters to the Cuban Air Force.

Another Soviet tactical aircraft type that figured prominently in Cuba in those days was the Il'yushin IL-28 *Beagle* tactical bomber. In the course of Operation *Man***goos***ta* (Mongoose), an event which nearly started the Third World War, 42 nuclear-capable IL-28N bombers were shipped to Cuba in September 1962 together with a number of ballistic missiles. This triggered the famous Cuban Missile Crisis of September-November 1962 when the USA enforced a naval blockade of Cuba, causing the Soviet Union in turn to dispatch a naval task force to the Caribbean.

Fortunately, faced with the increasing probability of an all-out war with the USA which would be a war of annihilation, the Soviet leaders had the common sense to back down and withdraw the missiles from Cuba in an effort to ease the situation. Addressing the nation on 20th November 1962, US President John F. Kennedy said that the Soviet leader Nikita S. Khruschchov had pledged to withdraw the nuclear-capable bombers within 30 days and agreed to let the Americans monitor this process; consequently, JFK had instructed the US Secretary of Defense to lift the naval blockade.

The IL-28Ns left Cuba in early December aboard the freighters S/S *Kasimov* (15 aircraft), S/S *Krasnograd* (15) and S/S *Okhotsk* (12). In order to make it patently clear to the US government that the Soviet Union was keeping its commitments, the crated *Beagles* were placed on the ships' upper decks, suffering heavy corrosion damage because next to nothing had been done to protect them from the salty ocean environment. As a result, many of the 42 aircraft had to be written off.



MiG-25RB '57 Blue', one of several deployed to Egypt in 1970; note the lack of national insignia

After this, the Cuban leader Fidel Castro Ruz derided the IL-28 as 'obsolete aircraft with limited speed and inadequate range' when speaking at a public rally. Obsolete they may have been, but Castro was clearly annoyed at letting go the missiles and bombers, which left him nothing to threaten *los gringos* with!

MiG-25: the Egyptian experience

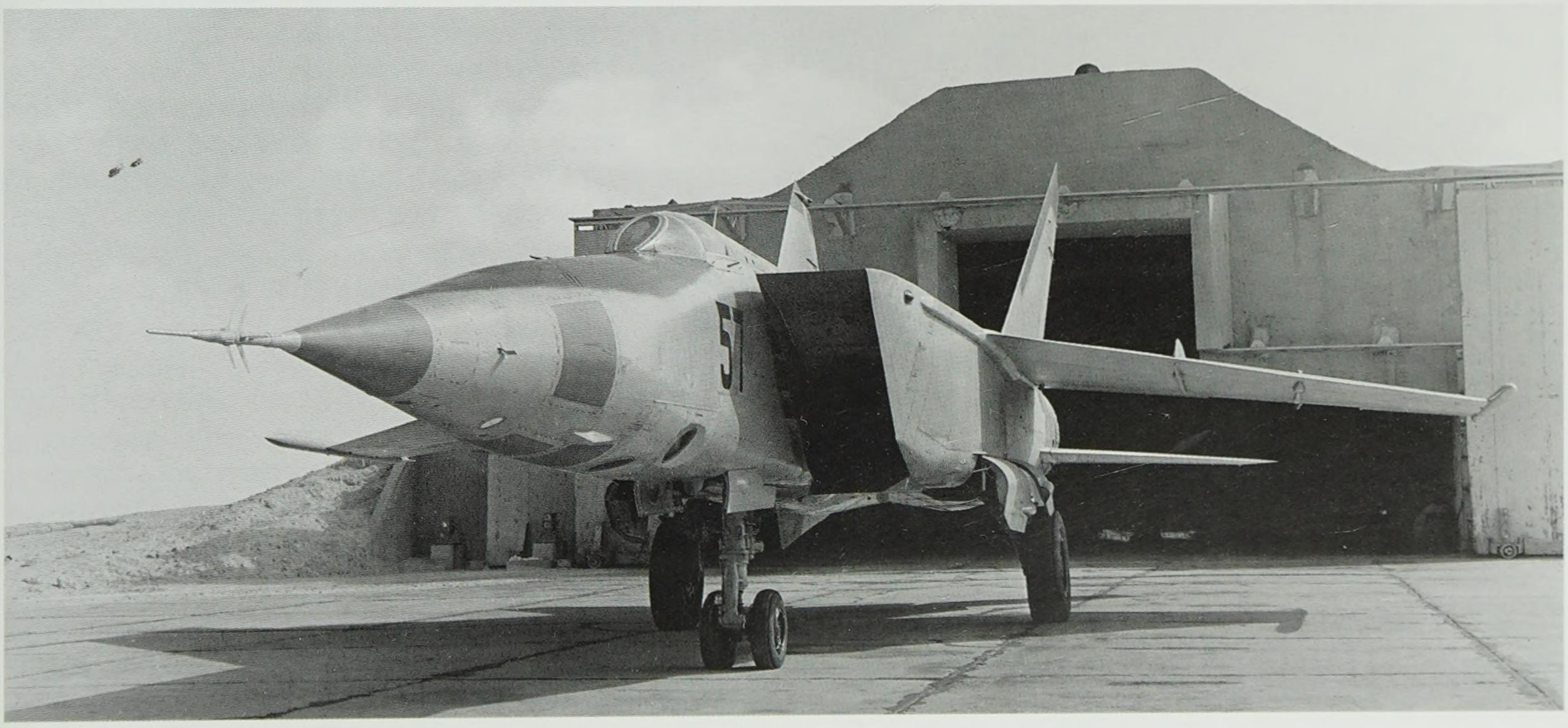
The MiG-25, which was then the latest state of the art in Soviet combat aircraft design, saw action on the Middle Eastern theatre of operations. Being on friendly terms with the Arab nations, the Soviet Union could not remain passive when Israel defeated Egypt in the Six-Day War of June 1967.

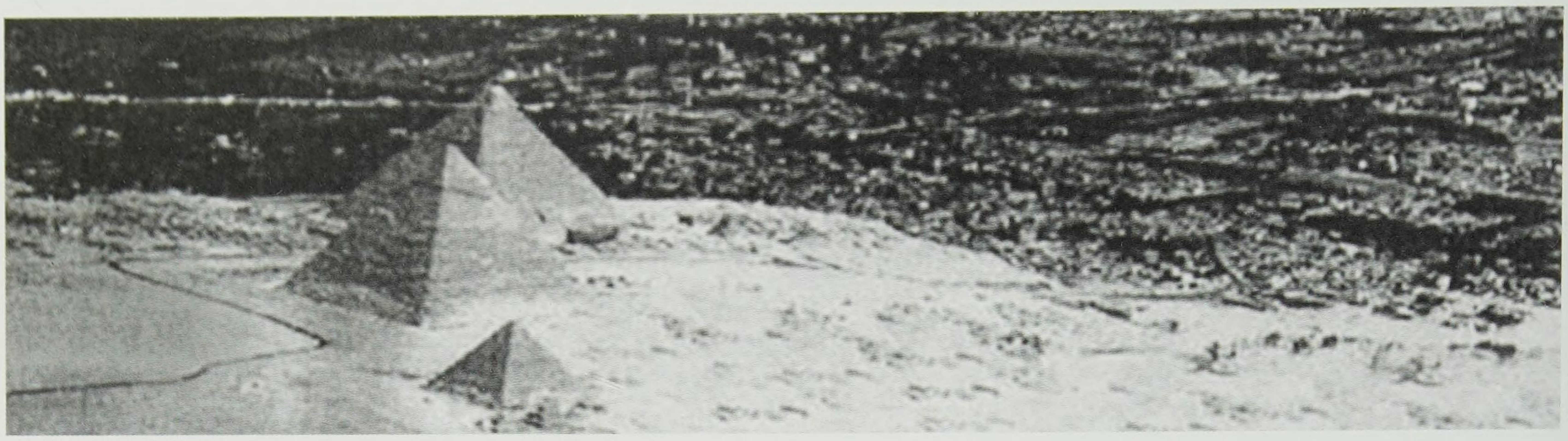
In late January 1970 Egyptian President Gamal Abdul Nasser paid a secret visit to Moscow, asking for assistance in re-equipping the Egyptian armed forces. Specifically this included training military specialists and building up an effective air defence system.

Nasser's request was granted immediately. As early as February 1970 Egyptian troops began arriving in the USSR by the brigade to take their training, and deliveries of the latest Soviet military equipment began. The headquarters of all Egyptian Army units, right down to battalion level, had Soviet military advisors attached.

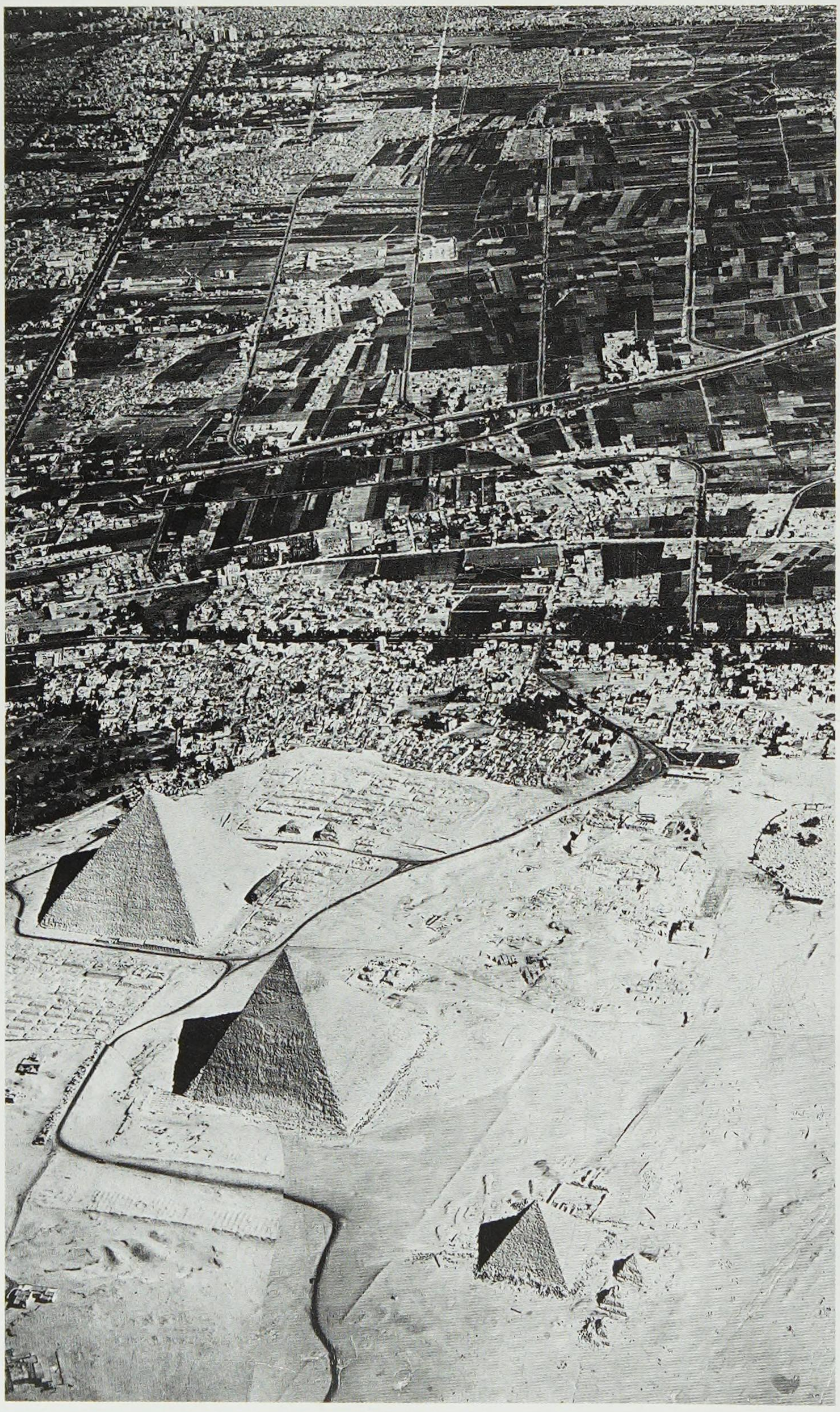
In March-April 1970 Soviet SAM battalions and fighter units moved into Egypt to provide protection for targets of importance. Not only that, Soviet military experts also took part in planning the operations aimed at liberating Arab territories annexed by Israel. A new Arab-Israeli war was brewing. The Soviet leaders were well aware that, despite the re-equipment, the Egyptian armed forces were in no shape to take on the Israelis alone. However, direct Soviet involvement in a Middle Eastern conflict was out of the question, as it was guaranteed to kick off the Third World War. Therefore, an unconventional decision was taken: a task force flying MiG-25R reconnaissance aircraft would be secretly dispatched to Egypt. This decision initiated by the Ministry of Aircraft Industry came at exactly the right time for the MiG-25, which badly needed a chance

MiG-25RB '57 Blue' parked outside the purpose-built hardened aircraft shelter at Cairo-West AB.





These shots of the famous pyramids at Giza, with the outskirts of Cairo in the background, testify to the capabilities of the MiG-25RB and its mission equipment.



to prove its capabilities and winning the trust of the Air Force.

In the summer of 1970 a 70-strong team headed by Deputy Minister of Aircraft Industry A. V. Minayev was formed at GNIKI VVS and sent to Egypt. This included engineering specialists from the institute itself, the Air Force, the aircraft industry (notably the Mikoyan OKB) and the electronics industry, as well as six experienced test pilots. The real rank and status of each man in the team was kept secret, and the group was closely guarded by Egyptian commandos at all times after arriving in Egypt.

For various reasons there was no point in sending the MiG-25P *Foxbat-A* heavy interceptor to the Middle East. Conversely, four MiG-25R *Foxbat-B* reconnaissance aircraft would do a lot more good, since they could furnish tactical information rapidly and, importantly, boost the morale of the Egyptian forces.

Two MiG-25Rs and two MiG-25RB reconnaissance/strike machines were selected among the early production *Foxbats* undergoing tests at GNIKI VVS. For PHOTINT duties the aircraft could carry two different camera sets composed of A-72, A-87 and A/E-10 cameras, as well as interchangeable SRS-4A/SRS-4B SIGINT packs. The MiG-25RBs differed in having provisions for bomb racks and being fitted with the ***Pel**eng* (Bearing) navigation/bombing computer.

The location where the group was to operate was kept secret until the last moment. Eventually the top brass informed that the group was to 'extend international help' to the Arab Republic of Egypt.

By late September 1970 the team was set to go. However, President Nasser died on 28th September; his successor, Anwar Sadat, seemed more intent on negotiating than waging a war, and the trip was postponed. However, Sadat confirmed that Egypt was firm in its resolve to win back the land seized by Israel, and the programme went ahead as planned.

In March 1971 the team and the four aircraft were urgently airlifted to Egypt by Soviet Air Force Antonov An-12 *Cub* and An-22 Antey (*Cock*) transports. The task force, designated the 63rd Independent Air Detachment (Det 63), was based at Cairo-West airport. For security reasons all members of the group wore Egyptian uniforms with no rank insignia. Det 63 reported directly to Col.-Gen. Okunev, the top Soviet military advisor in Egypt; Maj. Gen. Kharlamov (HSU) was responsible for tactical planning and objective setting.

The Egyptians had already built huge hardened aircraft shelters for the MiGs. In a few days the aircraft had been reassembled and prepared for action. In the meantime Israeli Defence Force/Air Force (IDF/AF) aircraft attacked the airfield several times, which caused the air defences at Cairo-West to be reinforced with S-75 and S-125 SAM batteries. The shelters containing the MiGs were further protected by ZSU-23-4 Shilka quadruple 23-mm (.90 calibre) self-propelled AA guns manned by Soviet crews. The airfield itself was guarded by Soviet troops; as it were, the Egyptians were only responsible for guarding the outskirts of the field.

It was just as well that the task force was so painstaking about security measures. Egyptian officers tended to treat security lightly, and having them participate in mission planning meant that the Israelis were aware of the group's plans almost before the meeting adjourned. A few days after Det 63 moved to Cairo the local paper *Al-Akhram* ran a story about 'New aircraft at Cairo-West air base', the accompanying pictures leaving no doubts as to their identity and origin. This forced a change in the co-operation procedures with the Egyptians to stop possible breaches of security; from then on all work of Det 63 would be done only by Soviet personnel.

Ensuring flight safety turned out to be a major difficulty, too. To avoid encounters with IDF/AF aircraft special air routes had to be developed, ensuring that the MiG-25s were protected by SAMs at all times during climb and descent. The pilots also perfected a steep landing approach and evasive manoeuvres for escaping missiles. During descent the MiG-25 boasted a thrust/weight ratio better than 1; in contrast, Israeli McDonnell F-4E Phantom IIs and Dassault Mirage IIICJs had a ratio of 0.6 to 0.7.

Sorties over Egyptian territory began in late April. During this period, mission profiles were drawn up, cameras tried out and navigation computers adjusted and programmed. Test pilot V. Gordiyenko was the first to go up. During the first sortie the SIGINT pack recorded that, in addition to Israeli radars on the Sinai Peninsula, the aircraft had been 'painted' by a US Navy destroyer's radar and a British surveillance radar located on a mountain top on Crete. Later, Yuriy Marchenko and Aleksandr S. Bezhevets also started flying sorties. To ensure the best possible picture quality the automatic flight control system had to follow the designated route very closely, using landmarks – which were unavailable in the desert. Hence the famous pyramids of Giza were used as landmarks, causing the pilots to refer to these missions as 'guided tours'.

For security reasons the MiGs would take off without warning before some Egyptian could let the cat out of the bag that a sortie was planned. Cairo-West ATC would be 'officially' advised that nothing more serious than a routine engine check or taxi trials was cooking. As a result, the first unexpected (and unauthorised) take-off caused veritable panic among the Egyptians.

Soviet pilots who took part in the MiG-25R/RB's Egyptian deployment in March 1971 (with Aleksandr S. Bezhevets in the middle) pose with one of the four aircraft involved.

Soviet technicians pose for a photo on the air intake trunk of MiG-25R '41 Red', one of the four deployed to Egypt.

Sorties over Israeli-held territory involved cruising at full military power for about 40 minutes. By then, the Tumanskiy OKB had extended engine running time in full afterburner from 3 to 40 minutes. Thus, virtually all sorties could be flown at maximum thrust; the R15B-300 turbojets proved reliable enough and gave no problems in the hot Egyptian climate.

The MiG-25 used special T-6 grade jet fuel with a high boiling point which was unavailable in Egypt. This exotic fuel was specially delivered by Soviet tanker vessels to Alexandria and thence to Cairo by road.

In May 1971 the sorties began in earnest. Missions were always flown in pairs in case one aircraft went down because of a critical systems failure or was shot down; the other pilot could report the crash and indicate the whereabouts. radio silence was maintained strictly – the pilots were allowed to go on air only in an emergency.

Angered by the overflights, the Israelis began a veritable hunt for the MiG-25, but the prey invariably got away. Yet the Israelis had an excellent SIGINT operation running, and calling in Egyptian fighters by radio to provide air cover would be an open invitation for the enemy to come in and try to shoot the MiG down. Since the Soviet pilots maintained radio silence, the Israelis had no alternative but to circle over Cairo-West, waiting for the *Foxbats* to line up for take-off.

Even then, they were out of luck. As the Israeli fighters moved in to attack they were immediately counterattacked by Egyptian MiG-21MFs flying top cover (these were summoned in advance from another airbase). When the Soviet pilots were ready two MiG-21s streaked over the runway, followed immediately by the MiG-25s, a second pair of MiG-21s protecting the rear. In a few minutes the *Foxbats* would accelerate to Mach 2.5 and go 'up, up and away'.

Missions were flown at maximum speed and 17,000-23,000 m (55,770-75,460 ft). The aircraft would gradually accelerate to Mach 2.8. At this rate, no one could keep up with the *Foxbat*, which was just as well because the MiG-25R was unarmed. As the aircraft approached the target the vertical and oblique cameras fired automatically, photographing a strip of land 90 km (56 miles) wide on either side of the aircraft. To prevent malfunctioning of the delicate equipment the camera bay was air-conditioned with a temperature variance of no more than 7°C (12.6°F).

Apart from the strong kinetic heating, photography at high Mach numbers involved another difficulty – the camera moved rapidly with respect to the object. In a single second the MiG-25 would travel almost 1,000 m (3,280 ft); thus, very high shutter speeds were needed to get clear pictures. To compensate for camera movement special adapters with movable prisms were developed, allowing the object to be kept in focus.

After losing several aircraft to SAMs the Israelis gave up trying to bomb the base, but the confrontation continued. In September 1971 an IDF/AF aircraft flying CAP near Cairo-West was shot down by an Egyptian SAM. The Israelis retaliated by attacking the SAM sites, with casualties among the Soviet personnel. This led the Soviet command to take additional protective measures for Det 63. In October 1971 special underground hangars

A Det 63 MiG-25 pilot wearing a pressure suit and helmet receives a bear hug from one of his colleagues after returning from a mission.

were built for the MiG-25s at Cairo-West. These shelters could survive a direct hit of a 500-kg (1,102-lb) bomb. Pre-flight checks and routine maintenance, including engine run-up, were done underground and the aircraft only left the shelter immediately before take-off.

The MiG-25s flew two sorties per month. As they covered all of the Suez Canal and went on to explore the Sinai Peninsula, the sorties grew longer, requiring a drop tank to be carried occasionally to extend the aircraft's range beyond 2,000 km (1,242 miles). The excellent pictures snapped from 20,000 m (65,620 ft) showed not only buildings and structures but also vehicles and even groups of people. Camouflaged materiel dumps and shelters were also visible. The SIGINT equipment helped to reveal a camouflaged ECM facility near Jebel Umm-Mahas and pinpoint Israeli air defence radars and SAM sites.

The MiG-25s ventured still farther east, and by the winter of 1971 their routes took them over Israel. The Soviet pilots were not afraid of Israeli jets scrambling to intercept them. The Phantom was inferior in speed and service ceiling; when trying to line up for an attack it would often stall and flick into a spin. The Mirage did even worse, and at best the Israeli pilots managed only to get a glimpse of the intruder.

The Raytheon MIM-23 Hawk SAMs used by Israel were no great threat to the MiG-25 either, since the aircraft operated beyond their altitude range (12,200 m/40,030 ft). On discovering a Hawk launcher the pilot would simply switch on the Siren' ECM set and carry on with his business. The deep penetration flights continued into March 1972. The Israeli ambassador to the United Nations lodged a formal complaint after each occurrence but no action was ever taken by the UN.

The Israelis did have a reason to be nervous. Among the support equipment Det 63 had brought with them were bomb racks for the two MiG-25RBs and FAB-500M-62T low-drag bombs specially developed for supersonic bombing. However, the Soviet pilots' missions did not include bomb strikes.

As an excuse for their inability to intercept the elusive MiGs the Israeli air defences stated that 'the object was clocked at Mach 3.2'! However, the flight recorders of the MiGs showed there were no major deviations from the prescribed flight profile. Oh yes, the aircraft were not always flown 'by the book'. On one occasion test pilot Aleksandr Bezhevets exceeded the speed limit to get away from pursuing Phantoms; some sources state that it was Air Force pilot Krasnogorskiy and the speed reached 3,400 km/h (2,111 mph). This was dangerous because the airframe could be weakened by overheating; yet, careful inspection of the aircraft showed no apparent damage.

The original staff of Det 63 returned to the USSR in April 1972; the aircraft stayed and were operated successfully by new pilots dispatched from VVS units. The accident rate

Det 63 pilots in full gear pose with one of the Soviet advisors.

Soviet MiG-25 pilots and technicians during the second deployment to Egypt in 1973.

remained very low. On one occasion the cockpit glazing failed at high altitude; the cockpit decompressed but the pressure suit and oxygen system performed flawlessly, enabling VVS pilot Yashin to land safely.

In all, the MiG-25s made about twenty flights over Israeli-held territory. The pictures brought back by the MiGs showed clearly the positions of Israeli troops along the Suez. The Egyptian high command was very impressed by the high resolution of the cameras because their own MiG-21RFs could not provide such detailed photos.

Eventually, however, the Egyptian leaders grew at odds with the Soviet Union. The MiG-25's excellent performance made Egypt want to buy the type, and that request was turned down. As a result, the tension escalated, and it was decided to move the aircraft back to the USSR. In July 1972 President Sadat banished all Soviet military staff from the country, putting an end to Det 63's operations.

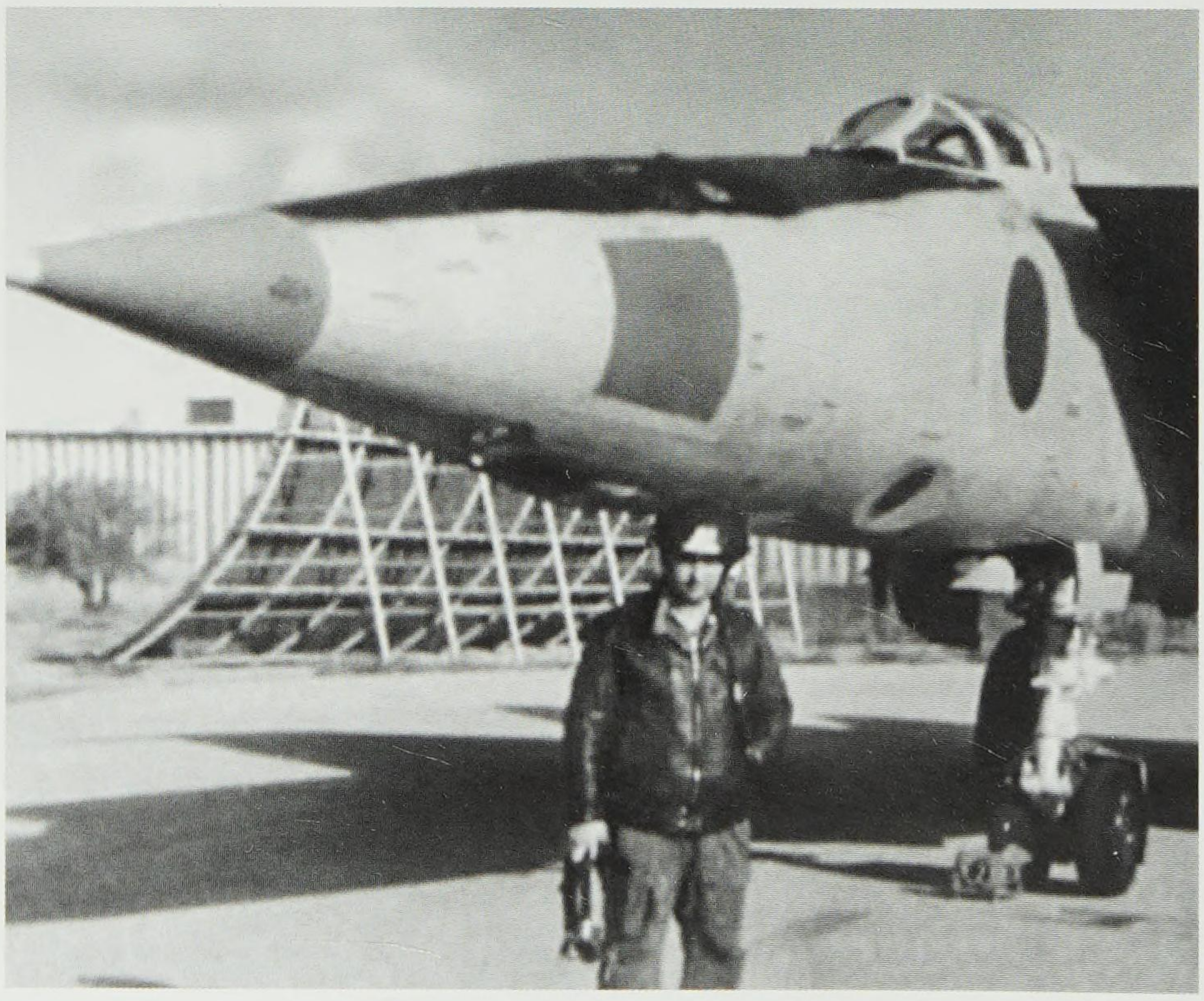
In October 1973 Sadat unleashed the Yom Kippur war. At first the Egyptians did very well, penetrating the Bar-Lev line and advancing into Israeli territory. But then the tables were turned as Israel launched a counteroffensive, securing a beachhead on the Egyptian side of the Suez Canal. Having no reliable information about the enemy, Egypt had no choice but to turn to the USSR for help again.

On 19th and 20th October the first MiG-25RBs were airlifted to Cairo-West AB again, along with personnel, support equipment, spares and even fuel. This time the situation was very different, with Israeli tanks advancing on Cairo at an average 10 km (6.2 miles) per day. Thus, as the MiGs were reassembled, flying them back to the USSR was considered as an emergency option in case the Israelis got too close for comfort. (Failing that, the aircraft were to be blown up if Cairo-West was overrun to prevent them from falling into enemy hands. The personnel would be evacuated by road to the Libyan border.) Also, this time the Soviet contingent, apart from the MiG-25 pilots and support staff, included only a handful of SAM crews, military advisors working under contract with the Egyptians and small logistics groups responsible for organising airlifts and restoring the ties with the Egyptian top command.

A few days later Egypt and Israel began truce talks. By the time hostilities ended one MiG-25 was flying and another had been assembled. Now, considering the possible threat from Soviet-built S-75 SAMs captured by the Israelis, it was decided to send a pair of MiG-25s on a reconnaissance sortie one hour before the truce became effective; one aircraft was to reconnoitre the Suez Canal, the other flying in a more easterly direction.

The mission was successful; processing the pictures took the rest of the day and all of the night. By dawn the Egyptian command had learned the worst: in some places their brigades were having trouble fighting back a single Israeli platoon that put on a show like it was attacking in battalion strength! In a nutshell, the Egyptians had missed the chance to win a solid combat victory. After that, the Soviet SAM crews pulled out speedily but the MiGs stayed for another year, leaving for home in late 1974. This was the last Soviet involvement in a Middle Eastern conflict.

It appears that Egypt was not the only area where Soviet *Foxbat* pilots operated, as illustrated by this Libyan Arab Republic Air Force MiG-25RB.



6 The Soviet Air Force in Eastern Europe and Mongolia

In anticipation of a possible armed conflict with the West, the Soviet Union had troops permanently deployed in Eastern Europe – that is, in the countries that came under Soviet influence after the Second World War. Firstly, these countries were at the forefront of the Cold War and would be the first to be hit by a hypothetical NATO offensive, which meant their small armed forces would be crushed immediately unless supported by Soviet military power. Secondly, the loyalty of certain Warsaw Pact allies was questionable, and Big Brother needed to maintain a military presence there – just in case.

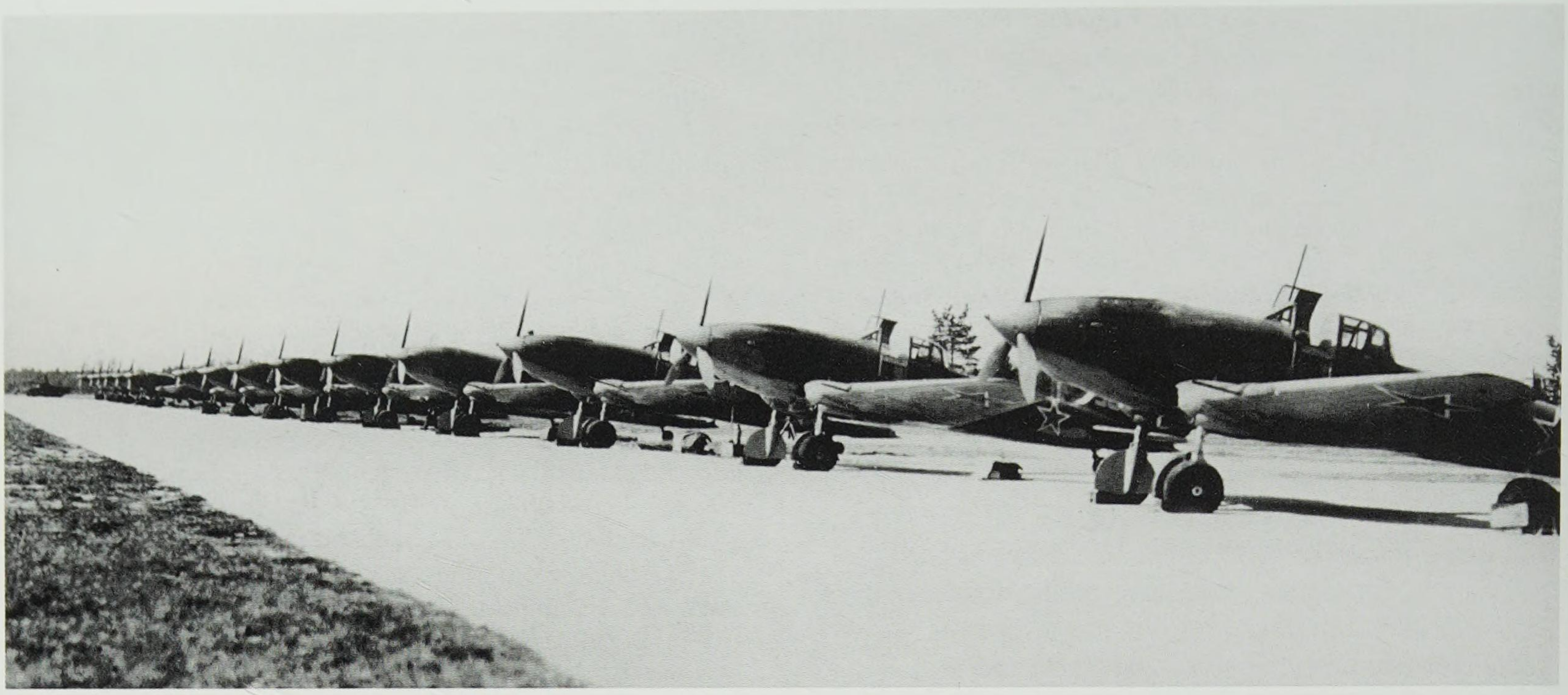
Naturally enough, the Soviet units stationed in Eastern Europe were all Tactical Aviation (FA) and Army Aviation units – there was no need to keep strategic bombers or transports so close to the potential adversary. Actually the Soviet air armies in the Warsaw Pact nations did have transport aircraft, but these were operated by independent composite air regiments (that is, direct reporting units), not by military airlift regiments.

Group of Soviet Forces in Germany (Western Group of Forces)

After the Second World War the Soviet Union maintained a strong military presence in Germany. Initially this was known as the Group of Soviet Occupation Forces in Germany (GSOVG – ***Groop**pa so**vet**skikh okkupatsi**on**nykh voysk v Gher**mah**nii*). In 1949 the name of the contingent was changed to Group of Soviet Forces in Germany (GSVG – ***Groop**pa so**vet**skikh voysk v Gher**mah**nii*) when the German Democratic Republic (East Germany) came into being.

In 1989 the GSVG changed its name to the Western Group of Forces (ZGV – ***Zah**padnaya **groop**pa voysk*). Even after German reunification on 3rd October 1990 and the collapse of the Soviet Union later that year the Soviet/Russian troops, including the air units, stayed in Germany until the final pullout in 1994.

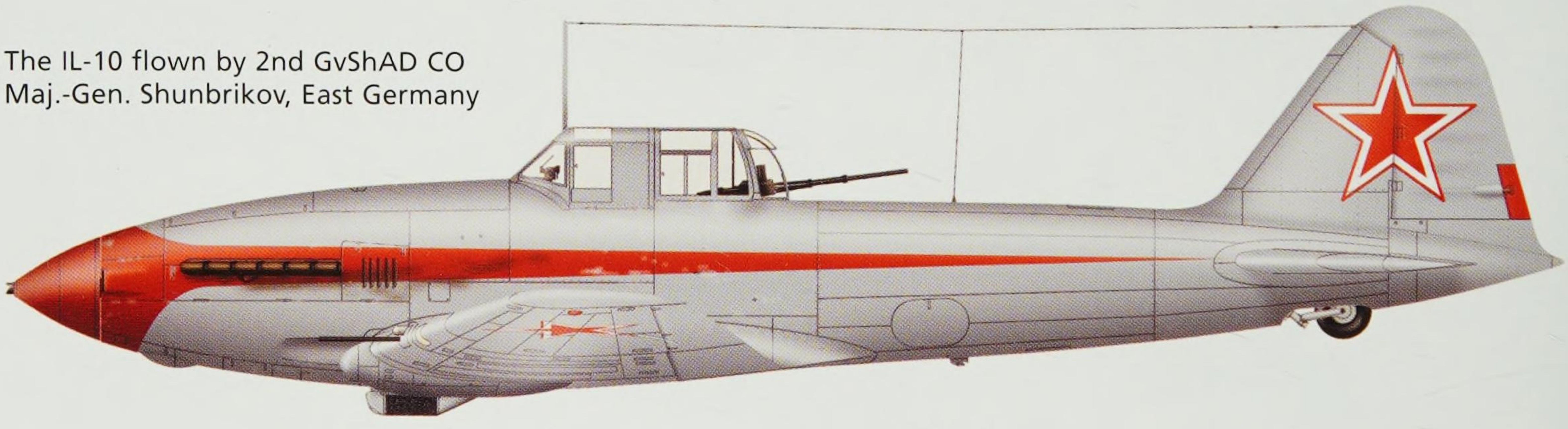
The Air Force component of the GSVG was the 16th Red Banner Air Army headquartered at Wünsdorf, a



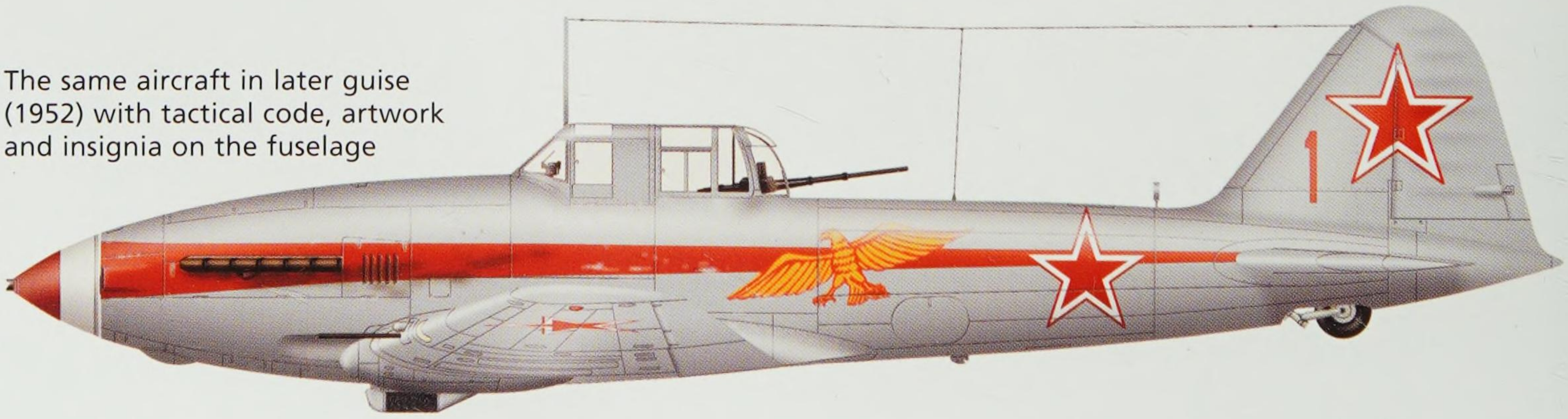
Post-war scene at one of the GSVG airfields. IL-10s are parked on the concrete hardstand of an ex-Luftwaffe airbase.

Previous page: 20th GvAPIB personnel lined up at Groß-Dölln AB for a farewell photo before the pullout in 1994.

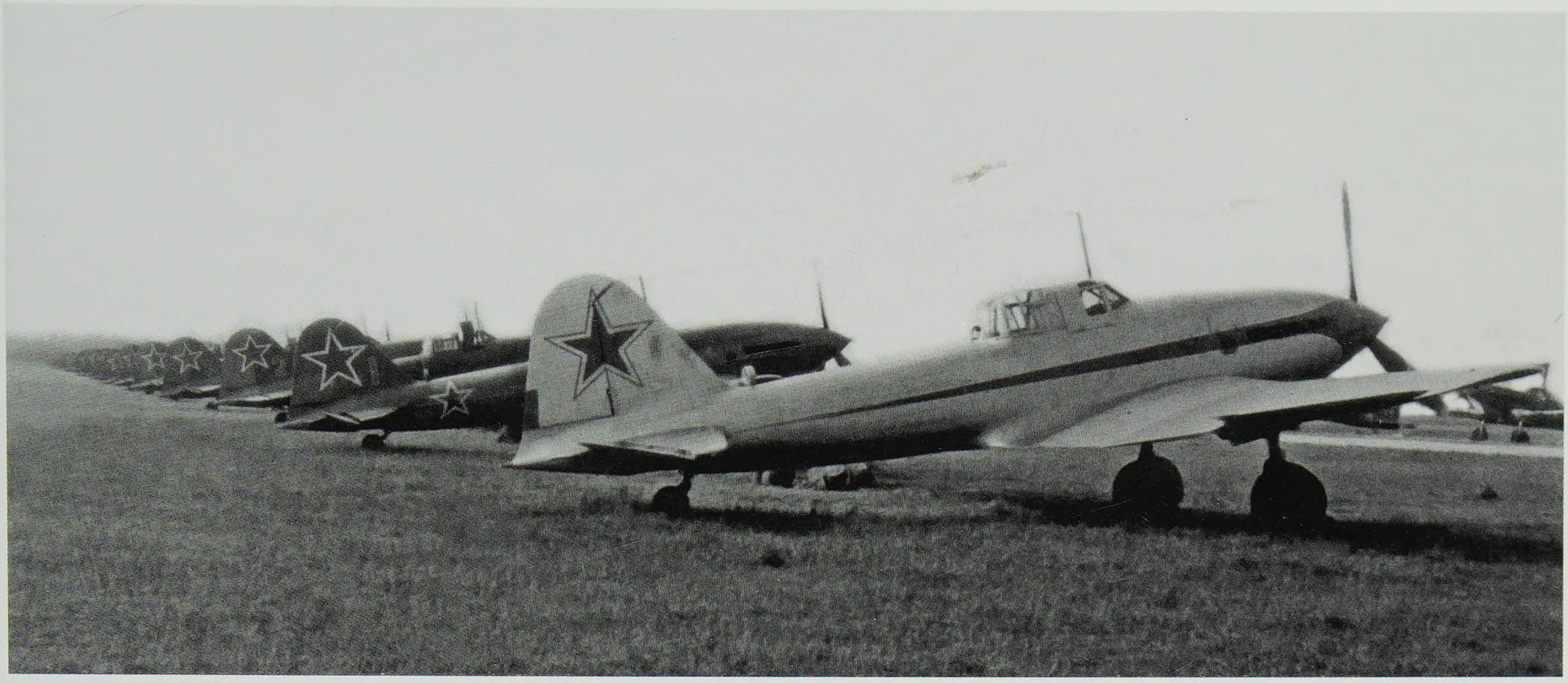
township 40 km (25 miles) south of Berlin, which also the hosted the HQ of the Group and was unofficially known as 'the capital of the GSVG'. Over the years the air army's order of battle changed perceptibly. As of 1965 the 16th VA included a bomber division at Werneuchen – the 200th FBAD (*fronto**va**ya bombardi**rov**ochnaya **a**viadi**vee**ziya*, tactical bomber division) – comprising three bomber regiments based at Werneuchen, Brand and Finow and three reconnaissance regiments at Stendal, Altenburg and Neu-Welzow), the so-called Northern Air Corps headquartered at Wittstock and the so-called Southern Air Corps headquartered at Wittenberg. The Northern Air Corps consisted of a fighter division at Damgarten with three regiments (at Damgarten, Wittstock and Templin) and a fighter-bomber division at Rechlin, also with three regiments at Lärz, Neuruppin and Parchim). The Southern Air Corps comprised two fighter divisions at Zerbst and Merseburg and a fighter-bomber division at Großenhain, again with three regiments each (at

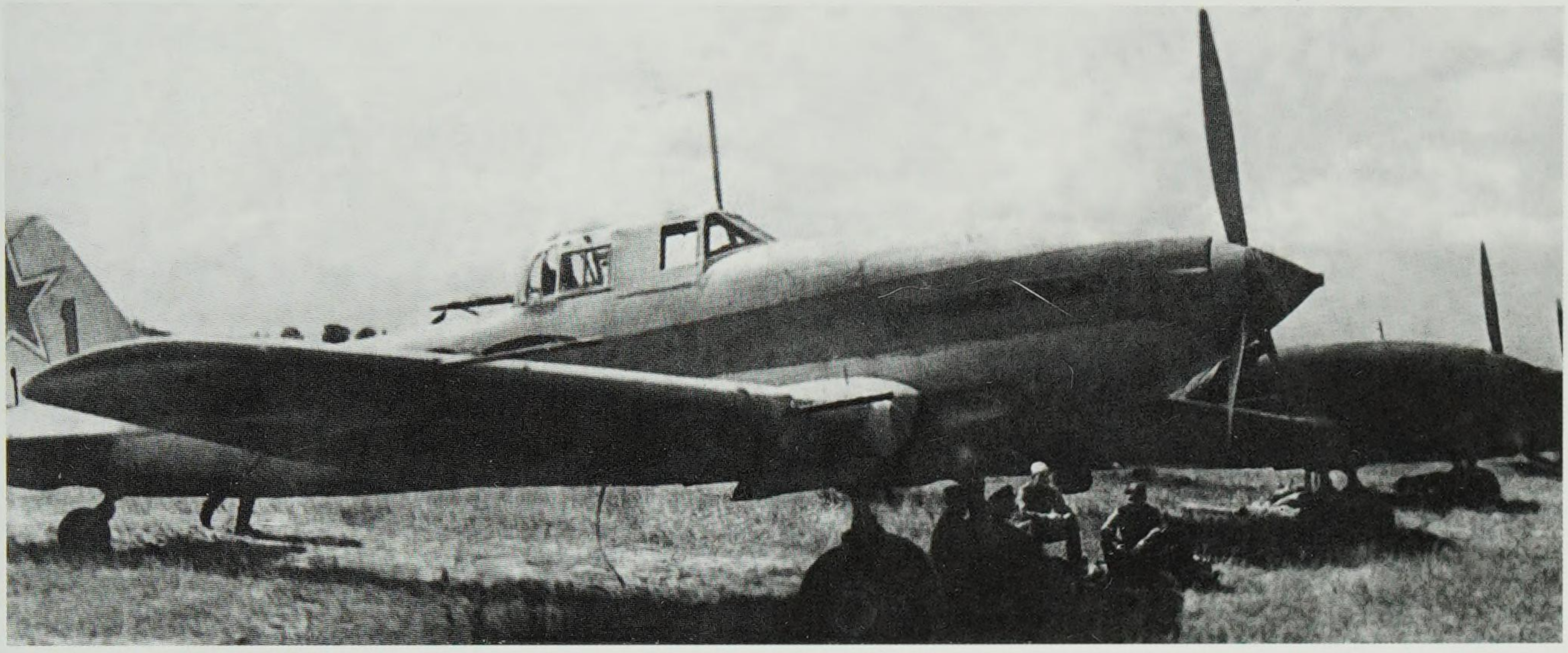


The IL-10 flown by 2nd GvShAD CO Maj.-Gen. Shunbrikov, East Germany



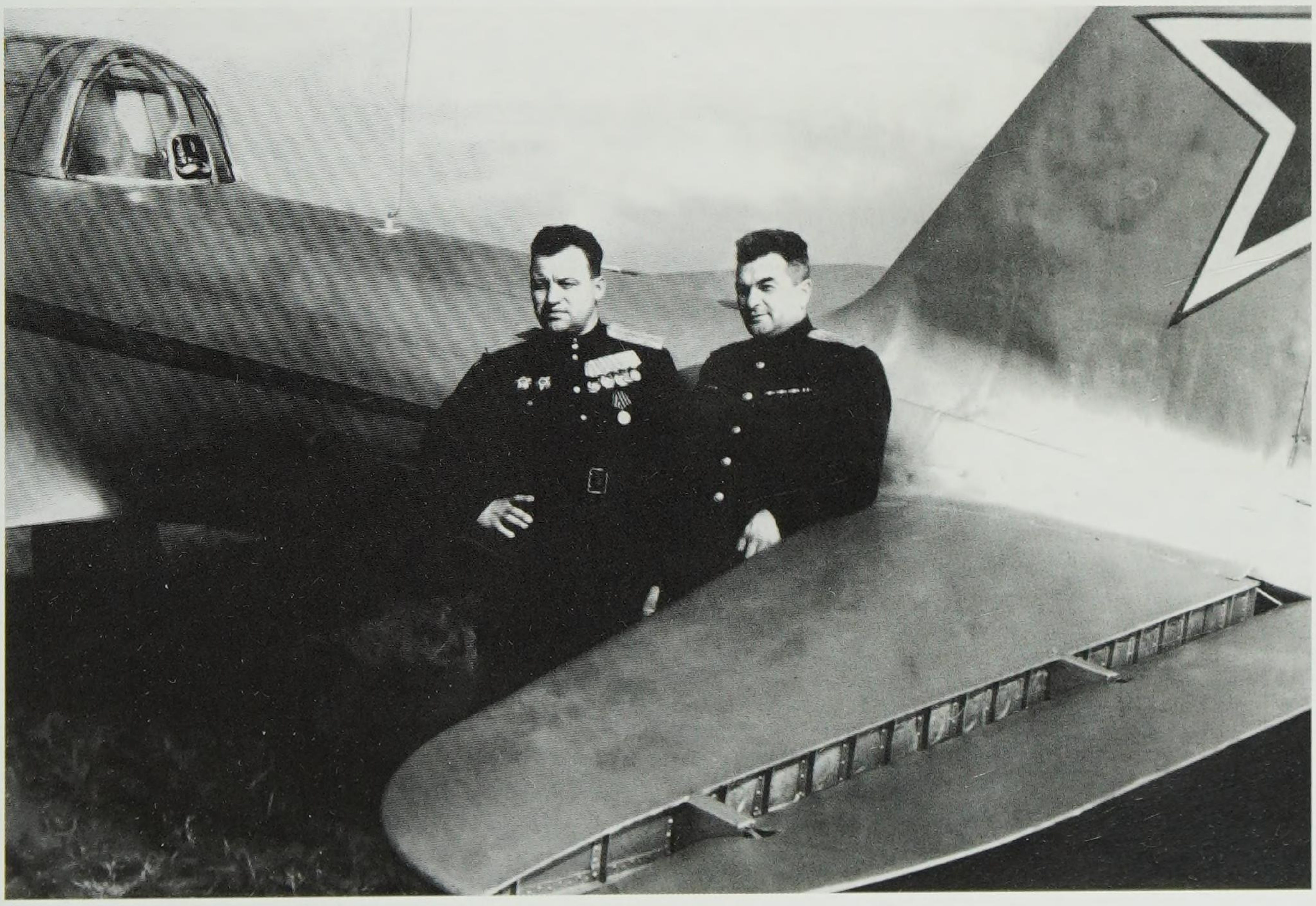
The same aircraft in later guise (1952) with tactical code, artwork and insignia on the fuselage



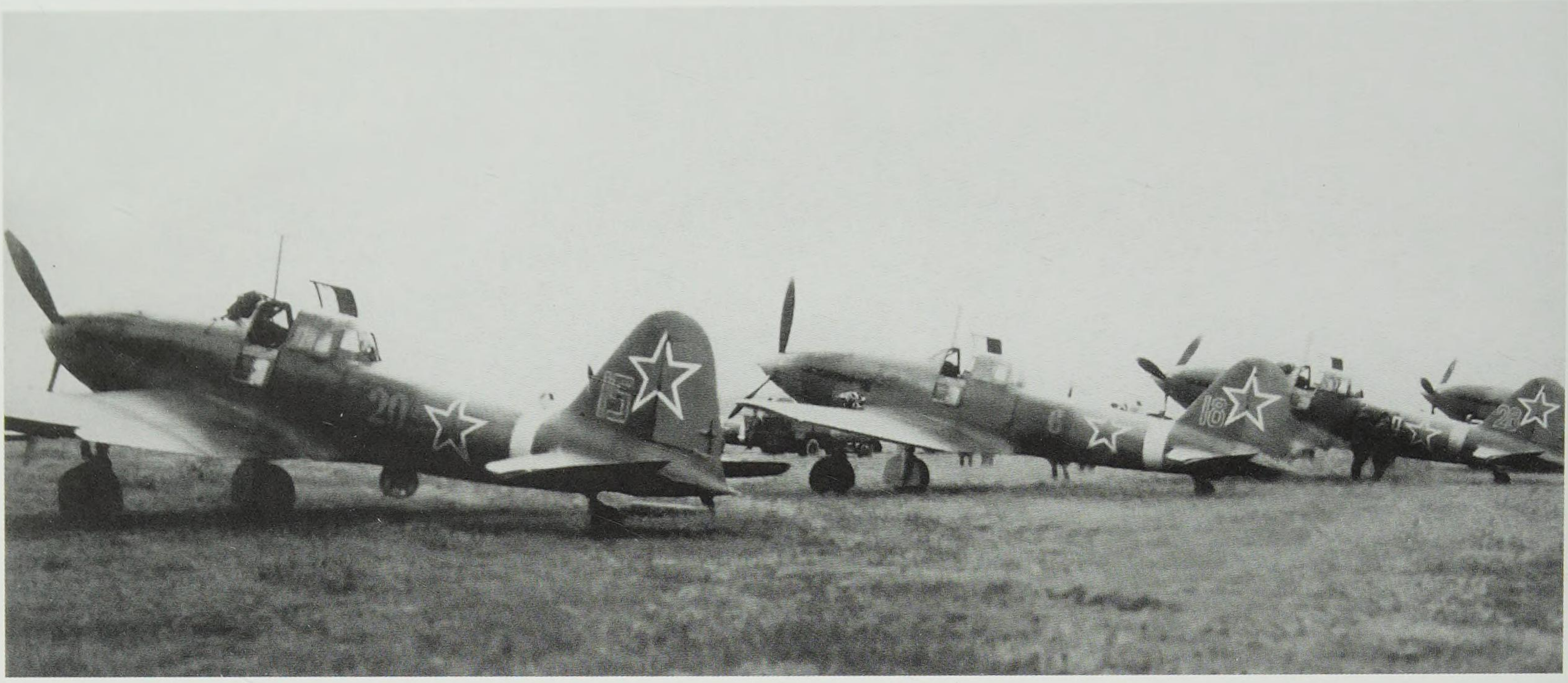


A similar picture taken a month or two earlier; the aircraft painted silver with red trim and wearing no code as yet is the mount of the 2nd GvShAD CO Maj.-Gen. Shunbrikov.

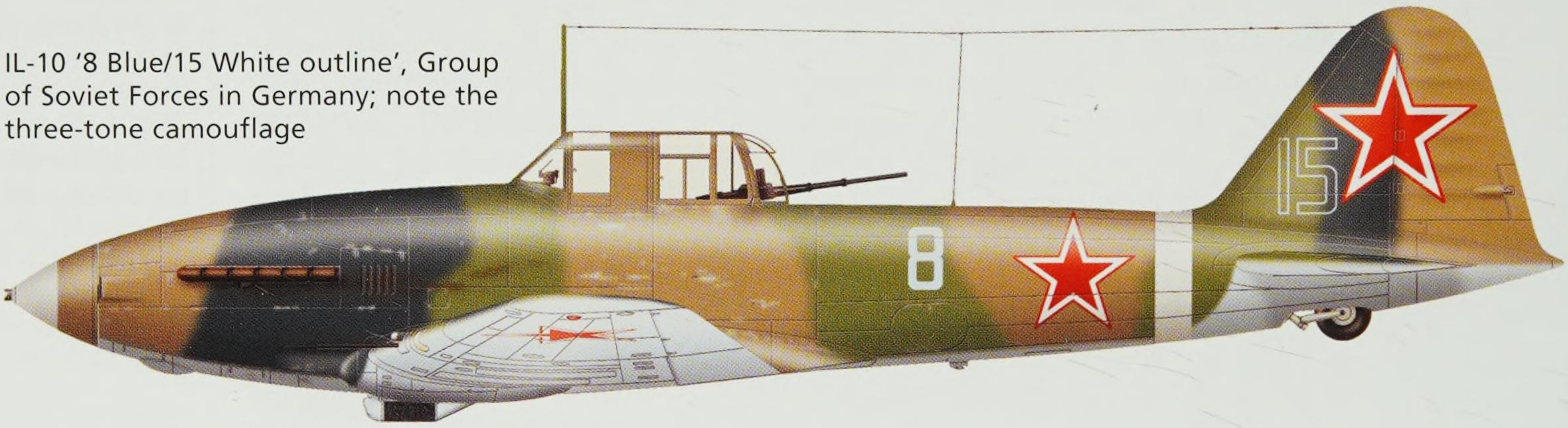
The same aircraft in a revised colour scheme in 1952.



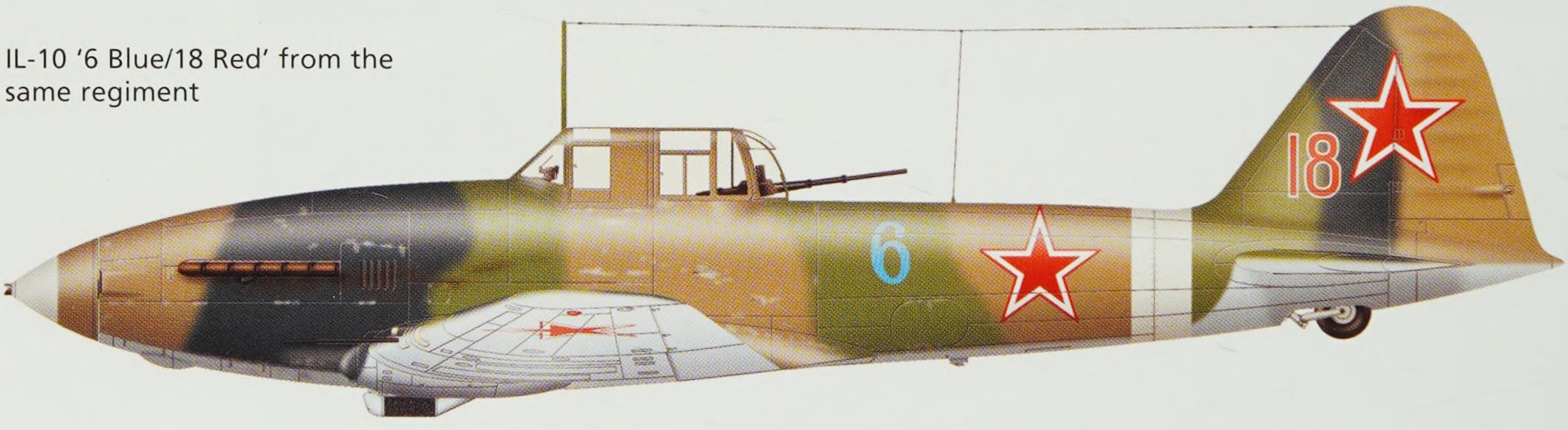
Major-General Shunbrikov, Commander of the 2nd Guards Attack Air Division (right), with his aircraft.



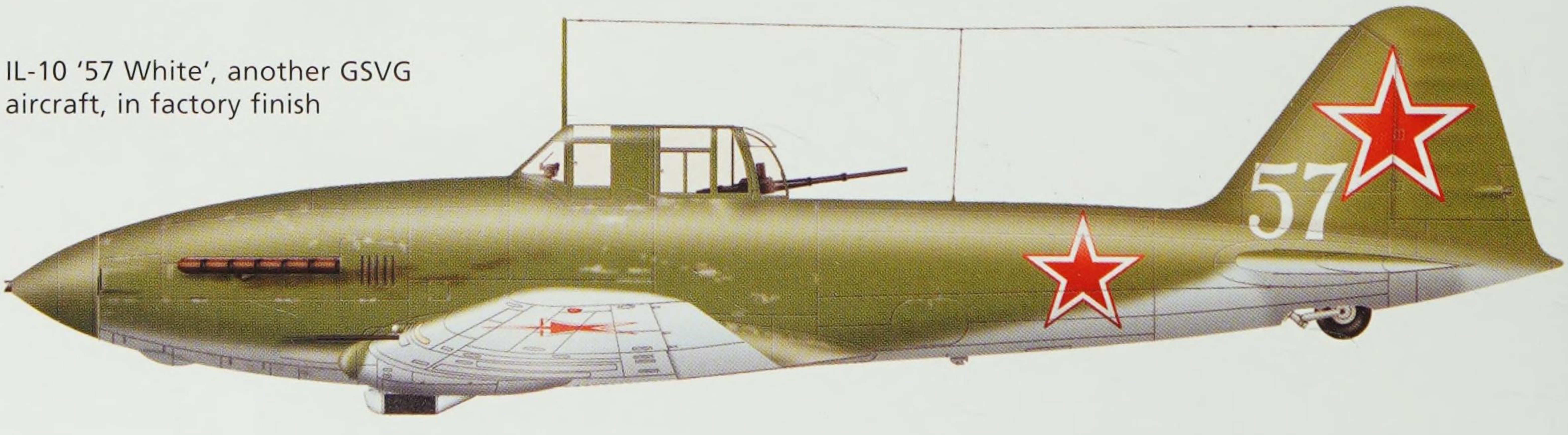
IL-10 '8 Blue/15 White outline', Group of Soviet Forces in Germany; note the three-tone camouflage



IL-10 '6 Blue/18 Red' from the same regiment



IL-10 '57 White', another GSVG aircraft, in factory finish



The flying personnel of a GSVG unit on the flight line; obviously the mission isn't about to begin just yet.

Opposite: Another scene in the Soviet occupation zone. Each of the unit's IL-10s wears two tactical codes (one of them obviously a leftover from its days with another regiment) and a quick-identification stripe on the rear fuselage.

Zerbst/Köthen/Jüterbog-Altes Lager, Merseburg/Altenburg/Falkenberg and Großenhain/Finsterwalde/Jüterbog-Altes Lager respectively). There were also direct reporting units – two military airlift regiments at Sperenberg and Oranienburg with transports and VIP aircraft, a transport helicopter regiment at Fürstenwalde and five helicopter squadrons at Brandenburg-Briest, Erfurt, Nohra, Schönwalde and Parchim, plus two target towing squadrons at Stendal and Parchim. The total strength was then more than 1,340 aircraft.

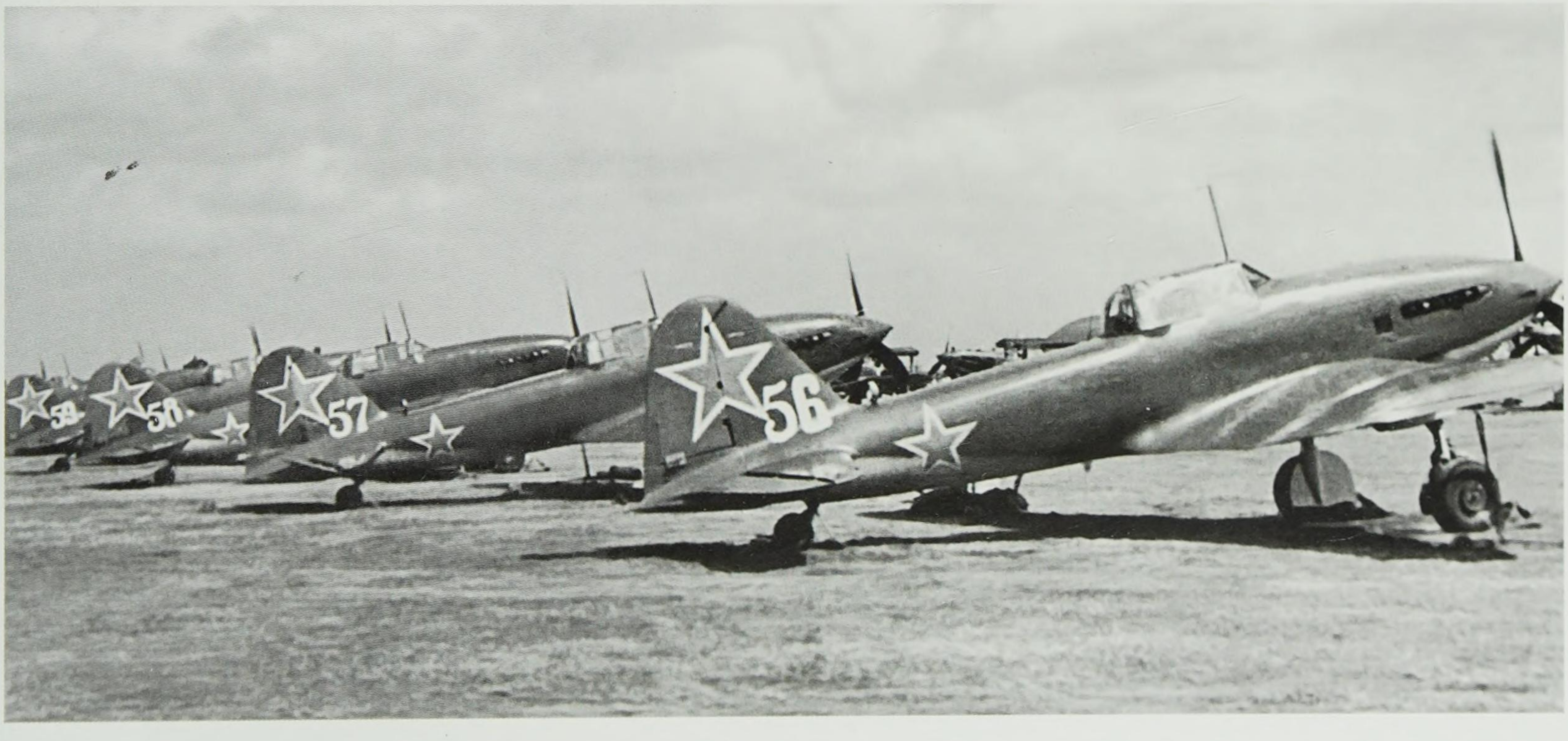
In 1990 the 16th VA comprised five air divisions – three fighter divisions controlled by the 72nd IAK (the 6th GvIAD, 16th GvIAD and 126th IAD) and two fighter-bomber divisions controlled by the 71st IAK (the 105th ADIB and 125th ADIB) plus seven direct reporting units (six regiments and an air detachment) making up a total of 21 air regiments; additionally, there were aircraft maintenance regiments and an independent communications/automated control systems regiment.

The GSVG had its own maintenance, repair and overhaul facilities at Jüterbog-Damm AB and Rangsdorf AB. The latter location was also a disposal facility for time-expired aircraft.

As of 1st October 1990 (two days before German reunification) the ZGV officially had 1,323 aircraft on strength (625 fixed-wing aircraft and 698 helicopters); German sources, however, list 1,552 aircraft.

The honorary appellations indicate the places where the unit in question fought in the Great Patriotic War. Thus, the 11th ***Vit**ebskiy* ORAP had a hand in liberating the Belorussian

Consecutively coded IL-10s at an airfield in the Soviet occupation zone in Germany. The tactical codes are hand-painted.



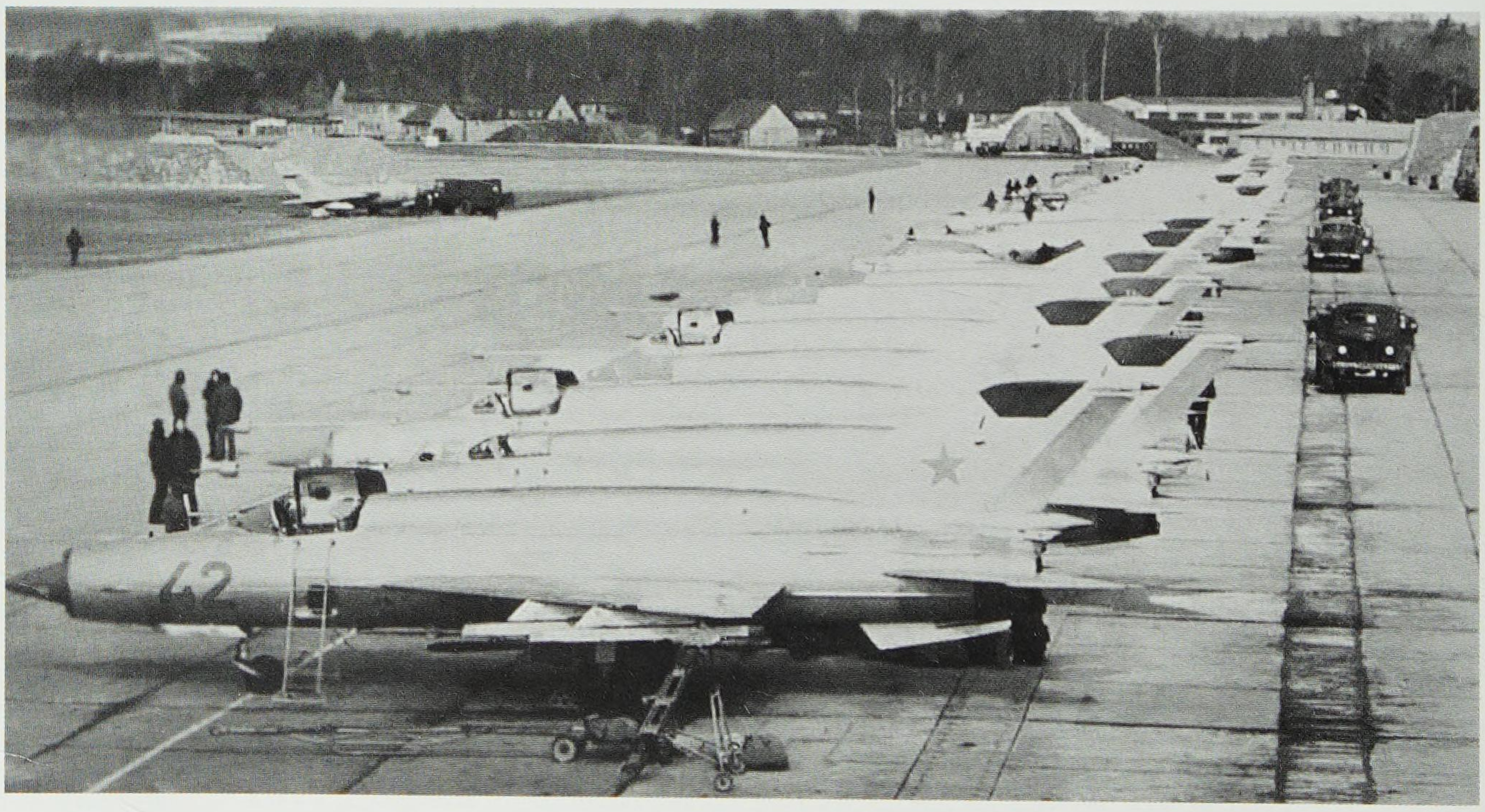
MiG-19 fighters like the one pictured here saw service in the Group of Soviet Forces in Germany.

city of Vitebsk. The 6th *Do**nets**ko-**Seg**edskaya* GvIAD fought to liberate the cities of Donetsk (the Ukraine) and Szeged (Hungary); the 31st ***Nik**opol’skiy* GvIAP participated in the liberation of the Ukrainian city of Nikopol’; the 73rd *Sevas**top**ol’skiy* GvIAP was thus named for the liberation of Sevastopol’, a major seaport in the Crimea. The 16th ***Sveer**skaya* GvIAD took part in the battles on the River Sveer’ in Russia; the 73rd *Stalin**grad**sko-**Ven**skiy* GvIAP defended the skies of Stalingrad and liberated Vienna. The 559th ***Moz**yrskiy* APIB took part in liberating the Belorussian city of Mozyr’. The 116th ***Ra**domskiy* GvAPIB was named for participating in the liberation of the Polish city of Radom.

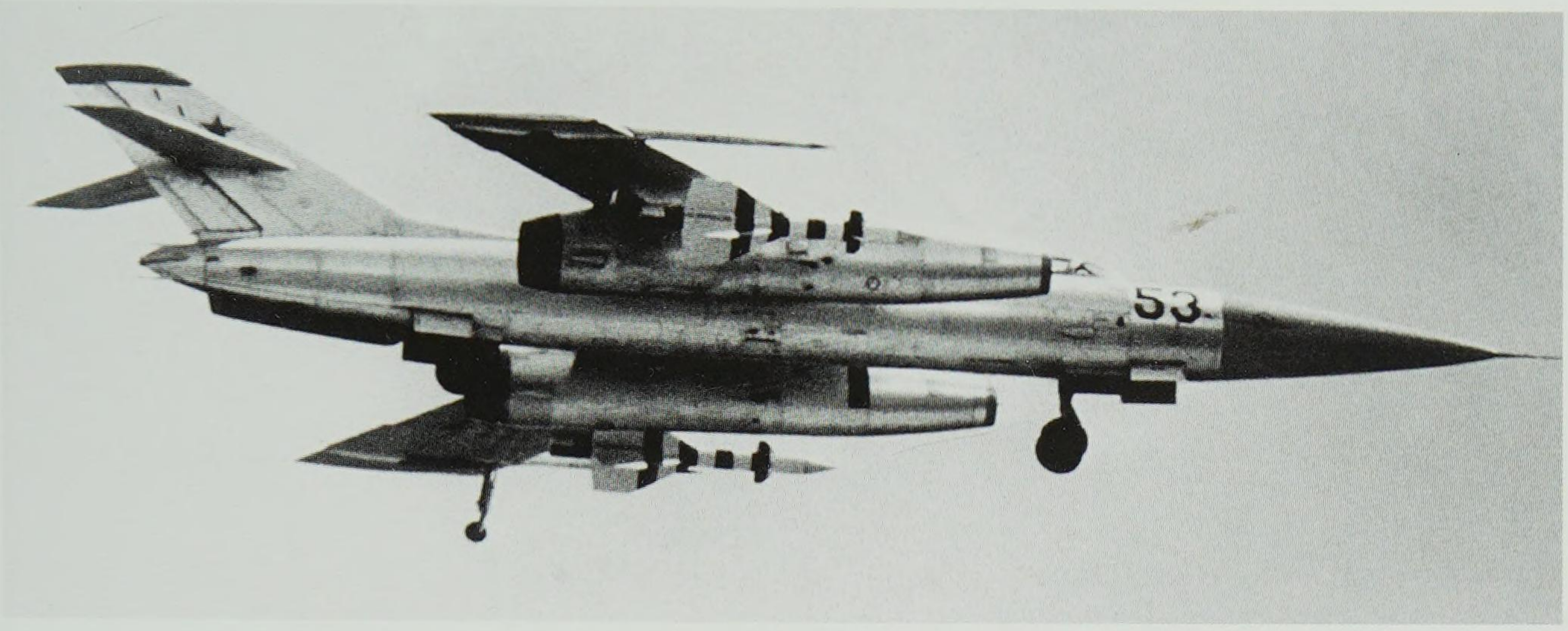
Over the years the 16th Air Army operated quite a large assortment of aircraft types, and these are grouped by function in the following listing. In the years immediately after the Great Patriotic War the 16th VA came to include several fighter units operating wartime Yakovlev fighters. The long-range Yak-9D, the tank-busting Yak-9T armed with a heavy cannon and the improved Yak-9U served with the 233rd, 347th, 517th, 518th and 812th IAPs while these regiments were on German soil. The Yak-9’s successor, the Yak-3, served with the 11th GvIAP, 133rd, 291st and 402nd IAPs.

In 1951 the MiG-15*bis* day fighter made its first appearance on German soil, replacing the propeller-driven Yaks. The *Fagot-B* served with the fighter regiments operating from Altenburg, Brandenburg-Briest, Cottbus, Damgarten, Erfurt, Finow, Großenhain, Köthen, Lärz, Merseburg, Neuruppin, Peenemünde and Wittstock, and possibly others as well. The type was replaced by the MiG-17 *sans suffixe* (*Fresco-A*) day fighter from 1954 onwards and the MiG-17F since 1955; however, barely a year later the *Fresco-C* was relegated to the fighter-bomber role.

The MiG-17PFU *Fresco-E* all-weather interceptor armed with AAMs was introduced in 1957. It served with the 16th IAD/773rd IAP at



Natural metal MiG-21SMTs at Altenburg AB in 1980 or 1981.



A 35th IAP Yak-28PM over Zerbst AB. Note the striped inert missiles.

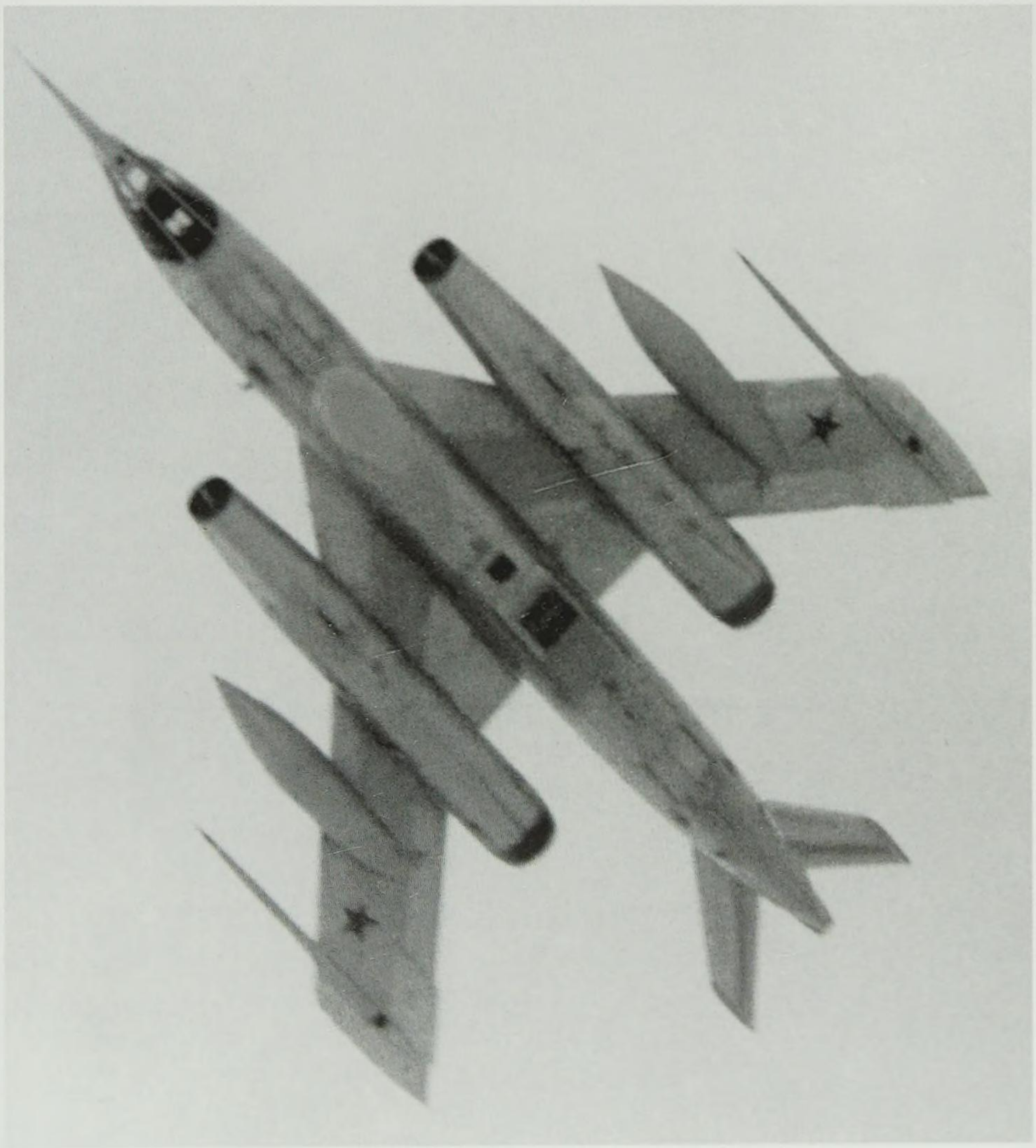
Damgarten, 6th GvIAD/31st Nikopol'skiy GvIAP at Falkenberg and 6th GvIAD/85th GvIAP at Merseburg. Other 16th VA units operating the *Fresco* as a fighter were the 833rd IAP at Jüterbog-Altes Lager, the 126th IAD/73rd GvIAP at Köthen, the 16th GvIAD/33rd IAP at Peenemünde and Wittstock (1954-58), the 234th IAD/787th IAP (MiG-17F/PF) at Templin (aka Groß-Dölln, 1955-69), and the 35th IAP (MiG-17F/PF) at Zerbst.

Starting in the mid-1950s, several MiG-19 units were deployed in East Germany until replaced by the Yak-28P and the MiG-21. The first GSVG unit to operate the type was the 16th GvIAD/33rd IAP at Wittstock, which converted to the MiG-19S *Farmer-C* in 1956; a year later the all-weather missile-armed MiG-19PM *Farmer-D* was introduced. Other East German bases used by MiG-19s until the type was withdrawn in 1970 were Brandis, Damgarten (1959), Falkenberg, Groß-Dölln, Großenhain, Haßleben, Jüterbog-Altes Lager, Lärz (MiG-19S/PM), Merseburg (6th GvIAD/85th GvIAP), Stendal, Templin (16th GvIAD/787th IAP, 1956-60), Wittstock and Zerbst (35th IAP). A MiG-19 of the latter unit possibly crashed near Karl-Marx-Stadt (now Chemnitz) sometime in the 1960s; however, it may have been a MiG-21.

The MiG-19s deployed in East Germany saw quite a bit of action. On 20th May 1963 a pair of *Farmer-Cs* flown by Capt. L. Shkarooba and Lt. (SG) M. Krylov forced a USAF Boeing RB-47 Stratojet reconnaissance aircraft to land at a Soviet airbase; the aircraft was released soon afterwards. On 28th January 1963 a USAF Rockwell T-39 Sabreliner trainer was shot down by MiG-19s, killing all on board. On 10th April 1964, a USAF/19th Tactical Reconnaissance Squadron Douglas RB-66D Destroyer ELINT aircraft intruded into East German airspace, whether by mistake or on purpose. A Soviet Air Force MiG-19S patrolling the area was directed towards it by ground control, shooting it down north of Gardelegen; the American crew bailed out and were captured by the East Germans. After negotiations at the presidential level the incident was played down and the crew returned to the USA.

The first in a succession of Yakovlev twinjet tactical aircraft to operate from German soil was the Yak-25M *Flashlight-A* two-seat, swept-wing subsonic interceptor, which served with the fighter regiments at Damgarten and Groß-Dölln in 1956-65. Later, the Yak-28P *Firebar* supersonic interceptor

A Yak-28R with the camera ports open. The type saw service with the GSVG in the 1970s.



The 16th Air Army order of battle as of 1990

Unit	Base	Aircraft	Fleet	Notes
Direct reporting units				
11th *Vitebskiy* ORAP	Neu-Welzow AB	Su-24MR (Sqns 1/2)	24*	Awarded the Red Banner Order and Kutuzov Order. Moved to Chernigov, the Ukraine, 15-6-93
		Su-24MP (Sqns 1/2)		
		MiG-25RB (Sqn 3)	12	
390th OAO	Sperenberg AB	An-12	1	Moved to Kubinka AB 21-6-94
		IL-20	2	
		IL-22	1	
226th OSAP	Sperenberg AB	An-12B	15	Moved to Kubinka AB 9-94
		An-24B	2	
		An-26	8	
		Mi-8T/Mi-8PS	10	
		Tu-134 'Balkany'	1	
294th ORAP	Merseburg AB, Allstedt AB	Su-17M3R	30	Withdrawn 21-5-91
357th OShAP	Brandis AB	Su-25/		Withdrawn 28-4-92
		Su-25UB		
		L-39C		
368th OShAP	Tutow AB	Su-25/	38*	Withdrawn 16-6-93; the Su-25BMs were reportedly operated by a separate squadron at Damgarten AB
		Su-25UB	1	
		Su-25BM	11	
		L-39C	4	
931st *Zabaikal'skiy* ORAP	Werneuchen AB	MiG-25RB†	16	Awarded the Red Banner Order and Kutuzov Order
		MiG-25BM	12	
		MiG-25RU	6	
6th *Donetsko-Segedskaya* GvIAD, HQ Merseburg				
Command flight	Merseburg AB	An-2	2	
31st *Nikopol'skiy* GvIAP	Falkenberg AB	MiG-23UB	6	Awarded the Red Banner Order and Suvorov Order. Moved to Zernograd, Russia, 15-6-93
		MiG-29 (*izdeliye* 9.12)/	32*	
		MiG-29 (*izdeliye* 9.13)/		
		MiG-29UB		
85th *Sevastopol'skiy* GvIAP	Merseburg AB	MiG-23UB	6	Awarded the Red Banner Order and Bogdan Khmel'nitskiy Order. Moved to Starokonstantinov, the Ukraine, 15-6-91 and reformed as 168th IAP
		MiG-29 (*izd.* 9.13S)/	30*	
		MiG-29UB		
497th BAP	Großenhain AB	Su-24		Moved to Lida, Belorussia, 7-89
968th IAP	Altenburg AB	MiG-23UB	4	Moved to Lipetsk, Russia, 22-4-92
		MiG-29 (*izdeliye* 9.13)/	30*	
		MiG-29UB		
139th ATP‡	Merseburg AB	–		
16th *Sveerskaya* Red Banner GvIAD, HQ Damgarten				
Command flight	Damgarten AB	An-2	1	
		Mi-9	1	
33rd IAP	Wittstock AB	MiG-23UB	8	Moved to Andreapol', Russia, 22-4-92
		MiG-29 (*izdeliye* 9.12)/	39*	
		MiG-29 (*izdeliye* 9.13)/		
		MiG-29UB		
773rd IAP	Damgarten AB	MiG-23MLD/	18*	Moved to Andreapol', Russia, 11-4-92
		MiG-23UB		
		MiG-29 (*izdeliye* 9.12)/	25*	
		MiG-29 (*izdeliye* 9.13)/		
		MiG-29UB		

787th IAP	Finow AB	MiG-23UB	4	Moved to Ross', Belorussia, 11-5-92
		MiG-29 (*izdeliye* 9.13)/ MiG-29UB	30*	
102nd ATP‡	Damgarten AB	–		
126th Red Banner GvIAD, HQ Zerbst				
Command flight	Zerbst AB	An-2	2	
35th IAP	Zerbst AB	MiG-23UB	6	Withdrawn 10-6-92
		MiG-29 (*izdeliye* 9.12)/ MiG-29 (*izdeliye* 9.13)/ MiG-29UB	28*	
73rd *Stalingradsko-Venskiy* GvIAP	Köthen AB	MiG-23UB	6	Awarded the Red Banner Order and Bogdan Khmel'nitskiy Order
		MiG-29	36*	Moved to Shaikovka AB, Russia, 5-91
833rd IAP	Jüterbog-Altes Lager AB	MiG-23MLD	29	Withdrawn 13-5-92; fleet also stated as 32 MiG-23MLDs and 7 MiG-23UBs
		MiG-23UB	8	
710th PARM‡	Damgarten AB	–		
105th ADIB, HQ Großenhain				
Command flight	Großenhain AB	An-2	1	
		Mi-9	1	
116th *Radomskiy* GvBAP	Brand AB	Su-24M	35	Awarded the Red Banner Order. Moved to Ross', Belorussia, 7-89
296th APIB	Großenhain AB	MiG-27M/MiG-27D	32	Withdrawn 22-3-93; reported as part of 6th GvIAD!
		MiG-23UB	8	
339th ShAP	Großenhain AB	Su-25	35	Withdrawn 1984
559th *Mozyrskiy* APIB	Fürstenwalde AB	MiG-27K	30	Awarded the Red Banner Order and Bogdan Khmel'nitskiy Order.
		MiG-23UB	10	Withdrawn 22-3-93
911th APIB	Brand AB	MiG-27K	32	Withdrawn 6-7-92
		MiG-23UB	10	
147th ATP‡	Großenhain AB	–		
125th Red Banner GvADIB, HQ Rechlin				
Command flight	Lärz AB (Rechlin)	An-2	1	
19th GvAPIB	Lärz AB (Rechlin)	MiG-27M/MiG-27D	32	Awarded the Red Banner Order. Withdrawn 23-3-93
		MiG-23UB	6	
20th GvAPIB	Groß Dölln AB (Templin AB)	Su-17M4	40	Withdrawn 5-4-94
		Su-17UM3	8	
730th APIB	Neuruppin AB	Su-17M	42	Withdrawn 28-5-91
		Su-17UM3	6	Support units
83rd OPS i ASU‡	?	–		

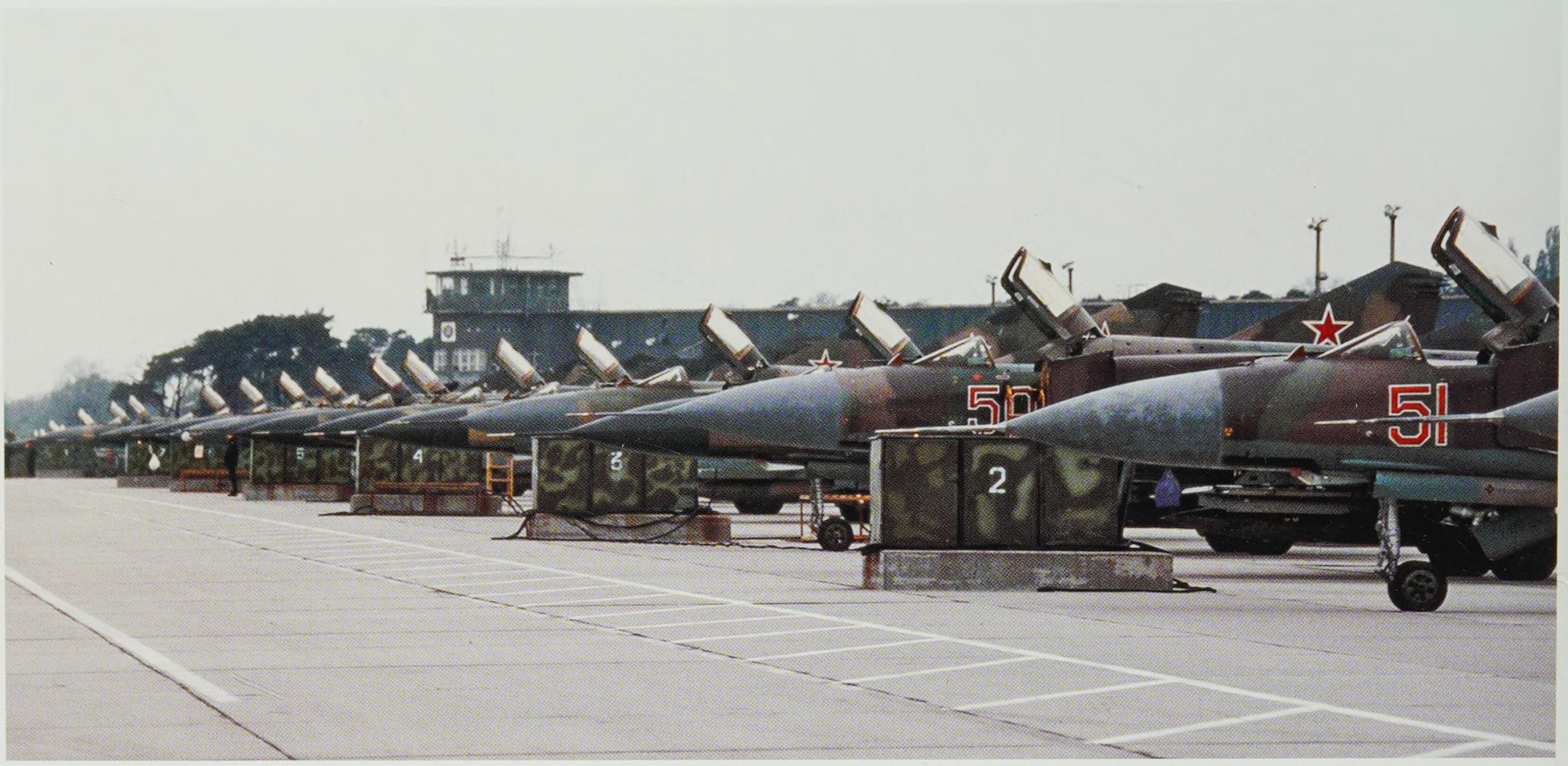
Notes: * Version by version breakdown unknown; for example, the 32 MiG-29s operated by the 31st GvIAP included at least five *izdeliye* 9.12 *Fulcrum-As*, 23 *izdeliye* 9.13 *Fulcrum-Cs* and one MiG-29UB. The 33rd IAP operated 30 *Fulcrum-As*, 12 *Fulcrum-Cs* and six MiG-29UBs (which adds up to 48) but many of these passed to other units by 1990.

† Various versions (MiG-25RBV/RBT/RBK/RBF/RBSh); some aircraft were progressively modified.

‡ ATP = *aviatsi**onno**-tekh**nich**eskiy polk* – aircraft maintenance regiment; OPS i ASU = *ot**del'**nyy polk **svya**zi i avtoma**tich**eskikh sis**tem** oopravl**en**iya* – independent communications/automated control systems regiment.

armed with two or four AAMs was deployed at Falkenberg, Jüterbog-Altes Lager, Köthen and Zerbst.

The MiG-21F-13 *Fishbed-C* day fighter was the first version to be operated by the 16th VA, entering service in 1959 and operating from several bases, including Wittstock. More modern versions followed in due course; the MiG-21PF *Fishbed-D* all-weather interceptor came in 1964, operating from Altenburg, Falkenberg, Groß-Dölln, Jüterbog-Altes Lager, Merseburg, Wittstock and Zerbst. The MiG-21PFM *Fishbed-F* followed in 1967 and was based at Damgarten, Finow and Jüterbog-Altes Lager. Later, the units at Altenburg, Damgarten and Wittstock re-equipped with the MiG-21SMT *Fishbed-K*. The MiG-21*bis Fishbed-L* remained in service with the 16th IAD/773rd IAP at Damgarten and 126th IAD/73rd GvIAP at Köthen until 1986. Additionally,



833rd IAP MiG-23MLDs on the flight line at Jüterbog-Altes Lager AB.

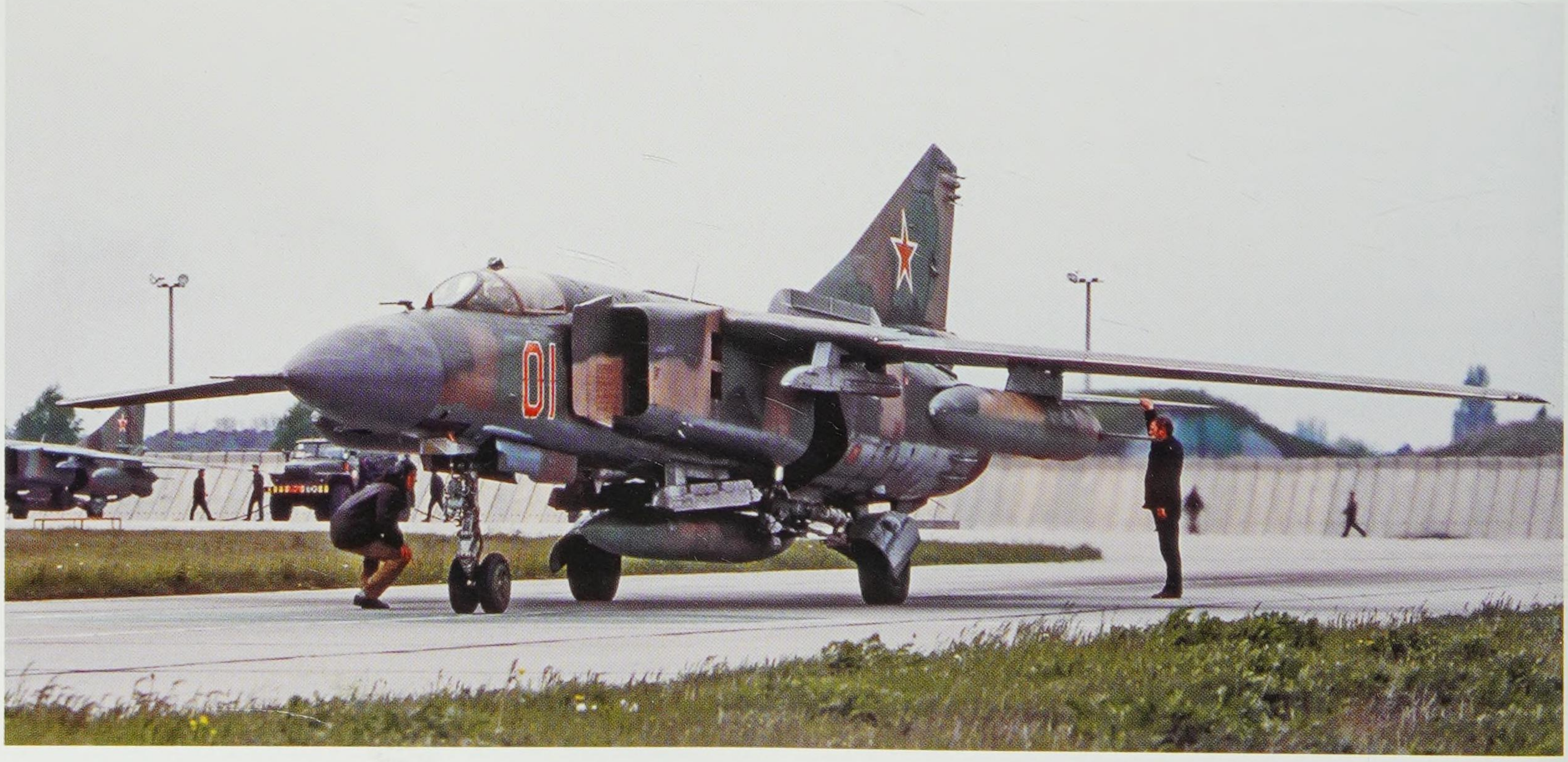
'01 Red', a 833rd IAP MiG-23MLD fitted with ferry tanks, pauses at the 'last chance' checkpoint before departing to Russia during the pullout.

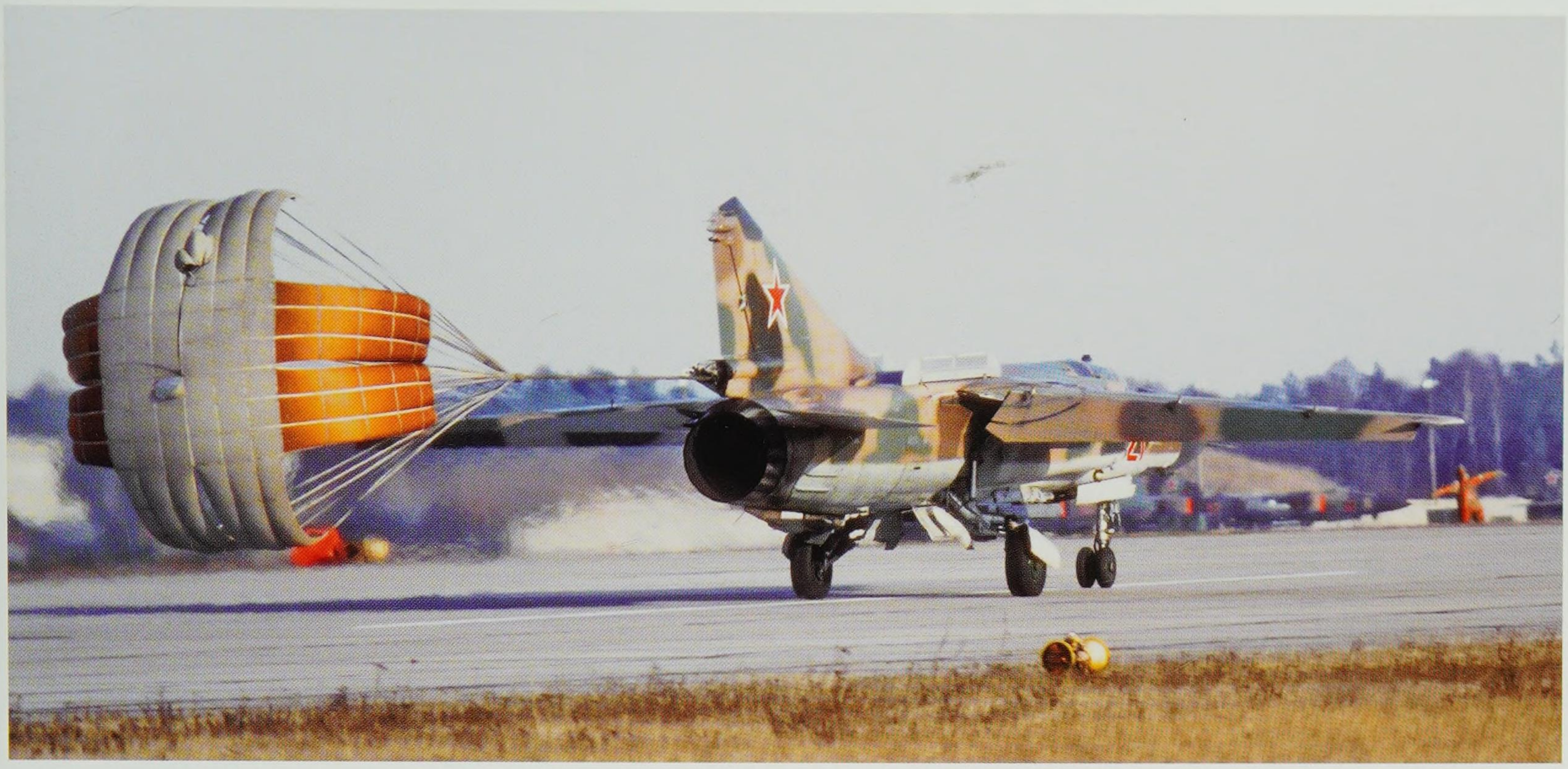
the MiG-21U *Mongol-A* trainer was introduced by the 16th VA in 1963 and superseded by the improved MiG-21UM *Mongol-B* in the mid-1970s.

It may be mentioned that the Su-9 *Fishpot-A* interceptor made brief deployments to East Germany; three aircraft operated from Werneuchen in 1965-66 and a few more from Parchim in the early 1970s. Similarly, Su-15 *Flagon* interceptors briefly deployed to Damgarten in 1976 and to Brand in 1983.

The 'swing-wing' MiG-23 family saw service in the 16th VA over a 20-year period. The MiG-23M *Flogger-B* tactical fighter was the first to arrive in 1973, serving with 33rd IAP at Wittstock, the 85th GvIAP at Merseburg and the 787th IAP at Finow, among other things. The MiG-23ML *Flogger-G* followed in 1976 and the MiG-23MLD *Flogger-K* in 1981 (the latter type served with the 773rd IAP at Damgarten and the 73rd GvIAP at Köthen). The two-seat MiG-23UB *Flogger-C* trainer served on in small numbers with the GSVG even after the fighter units had re-equipped with the fourth-generation MiG-29 because the MiG-29UB was still unavailable.

A handful of MiG-25PD *Foxbat-A* Mach 3 interceptors were operated by the 787th IAP at Finow AB since 1982. Their mission was to intercept the Lockheed SR-71A Blackbird spy-



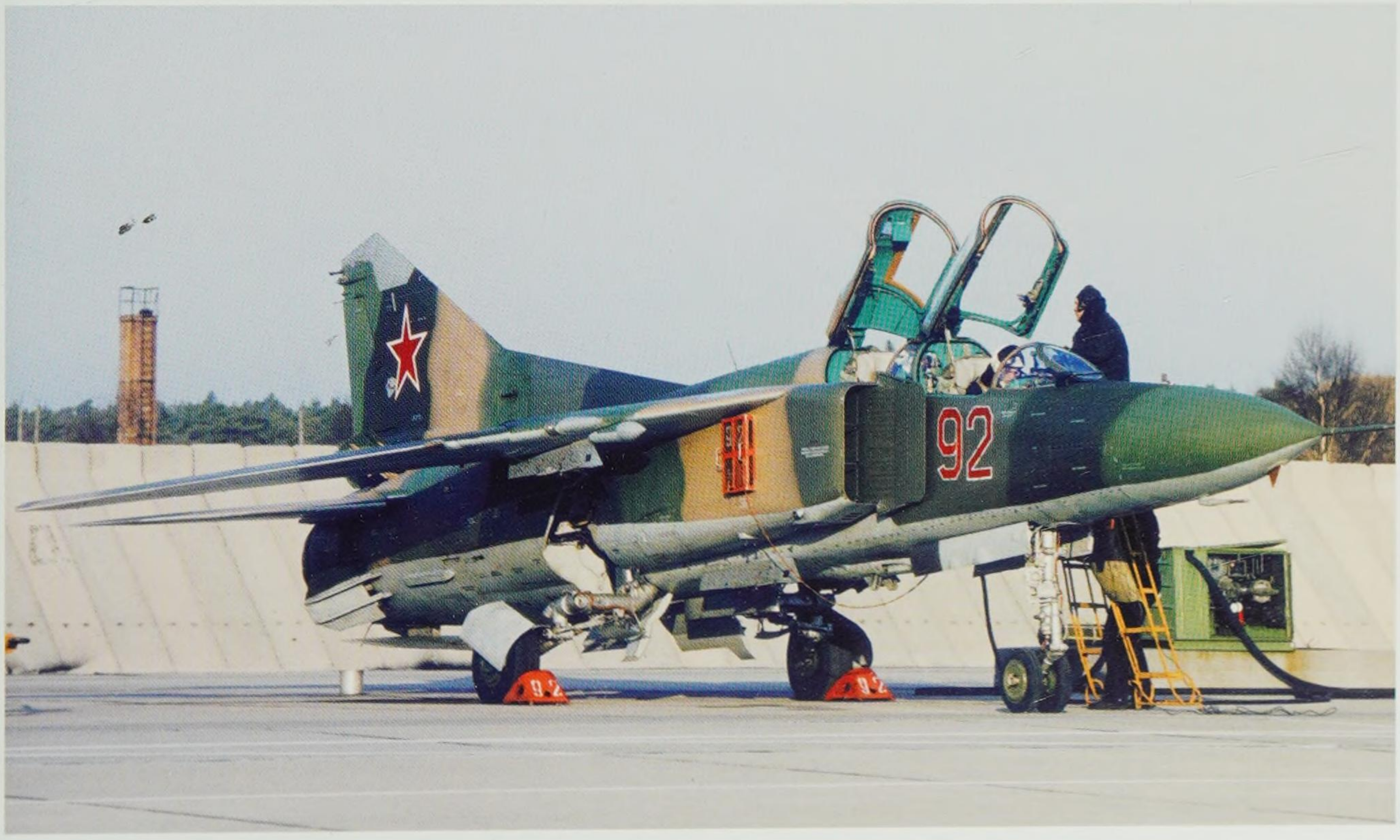


Here a *Flogger-K* streams its cruciform brake parachute on returning to Jüterbog-Altes Lager after a practice sortie.

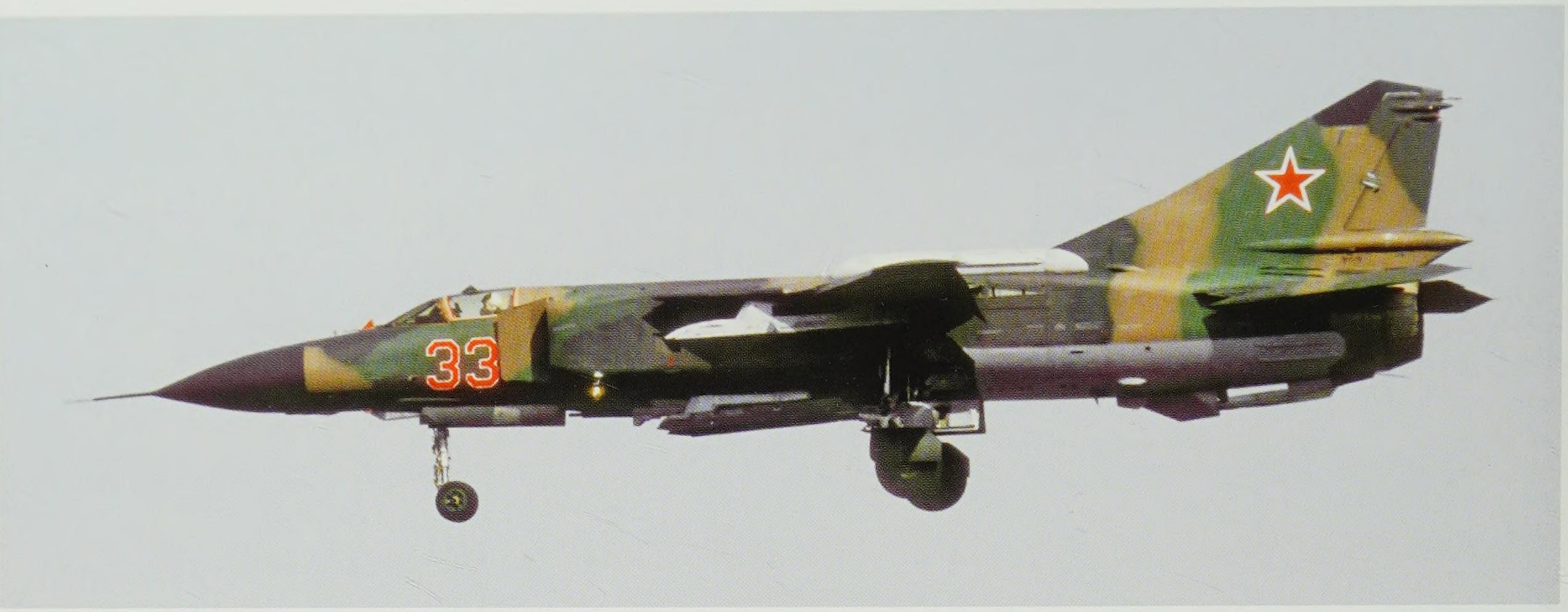
planes operating from RAF Mildenhall; however, when the USAF retired the Blackbird in 1989, the MiG-25PDs became superfluous and only the reconnaissance/strike versions remained with the 16th VA.

The MiG-29 was deployed abroad in large numbers due to its ability to deliver tactical nuclear weapons. The GSVG had by far the biggest *Fulcrum* contingent (around 250), the type serving with eight regiments. The 33rd IAP of the 16th IAD at Wittstock was the first to re-equip, trading its MiG-23MLs for MiG-29s in December 1985/early 1986. The first MiG-29s deployed to East Germany were *izdeliye* 9.12 *Fulcrum-As*; these were later supplemented with 'fatback' *izdeliye* 9.13 *Fulcrum-Cs*. By the late 1980s the ZGV operated a mix of early and late MiG-29s.

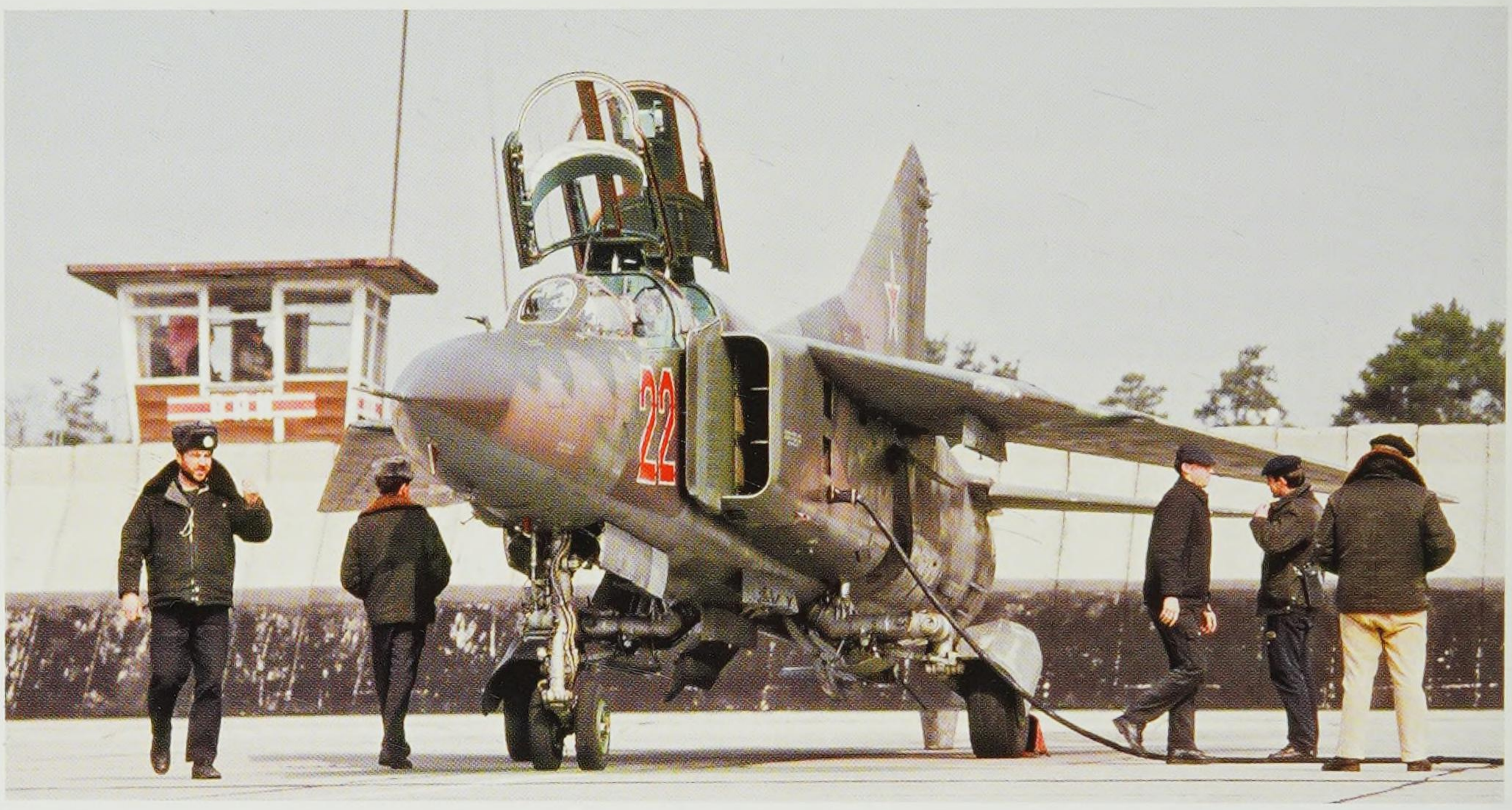
The 773rd IAP at Damgarten followed in 1987; this unit received its complement of MiG-29UB *Fulcrum-B* trainers from the outset, which undoubtedly facilitated the transition to the new type. Initially the single-seaters were all *Fulcrum-As*; later the unit acquired a number of *Fulcrum-Cs*, some of which came from the 33rd IAP and even from the Southern Group of Forces in Hungary. The 234th GvIAP also operated the MiG-29. The 787th IAP at Finow AB was the last unit in the 16th IAD to re-equip with the new hardware.



MiG-23UB '92 Red', apparently another 833rd IAP machine, is being prepared for an afternoon sortie.

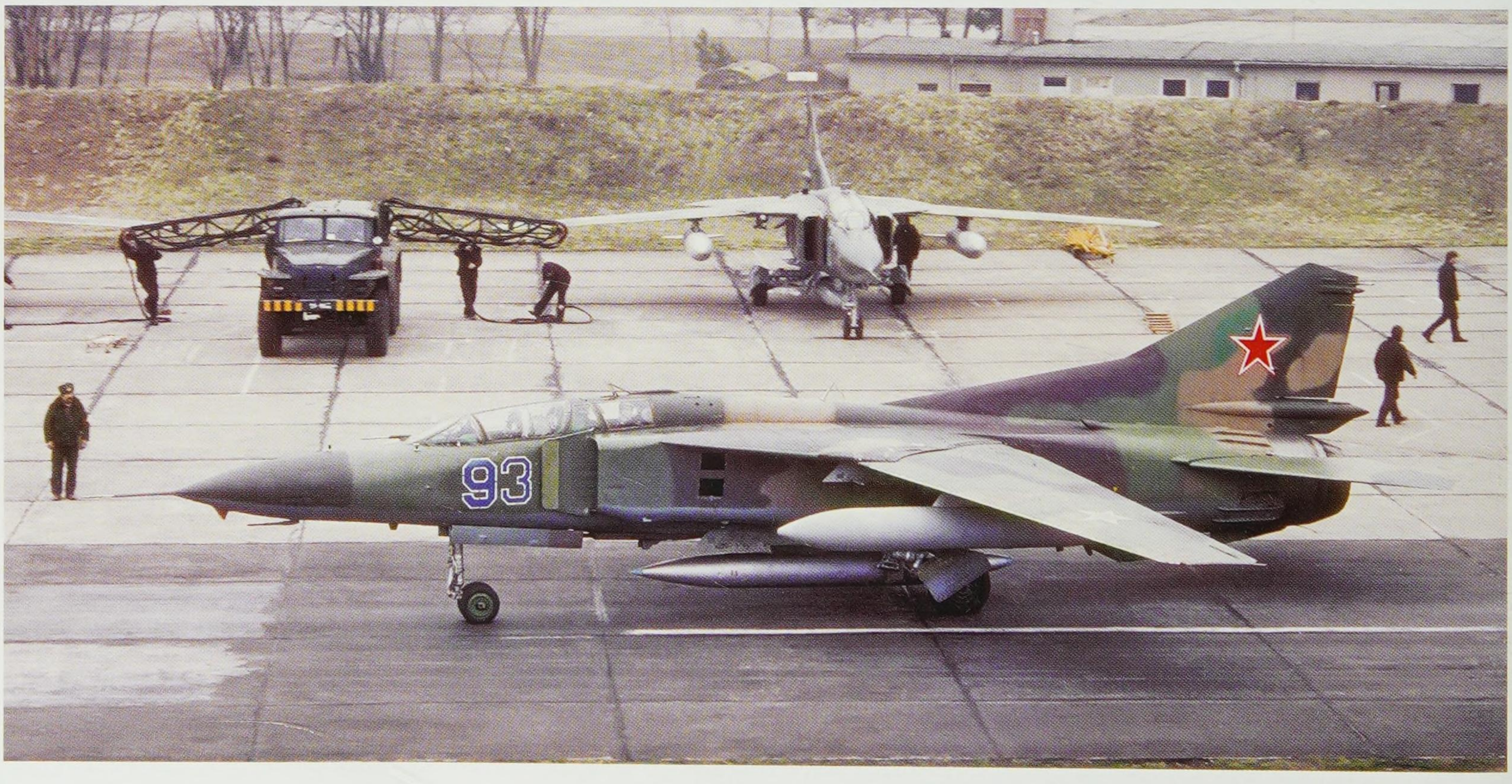


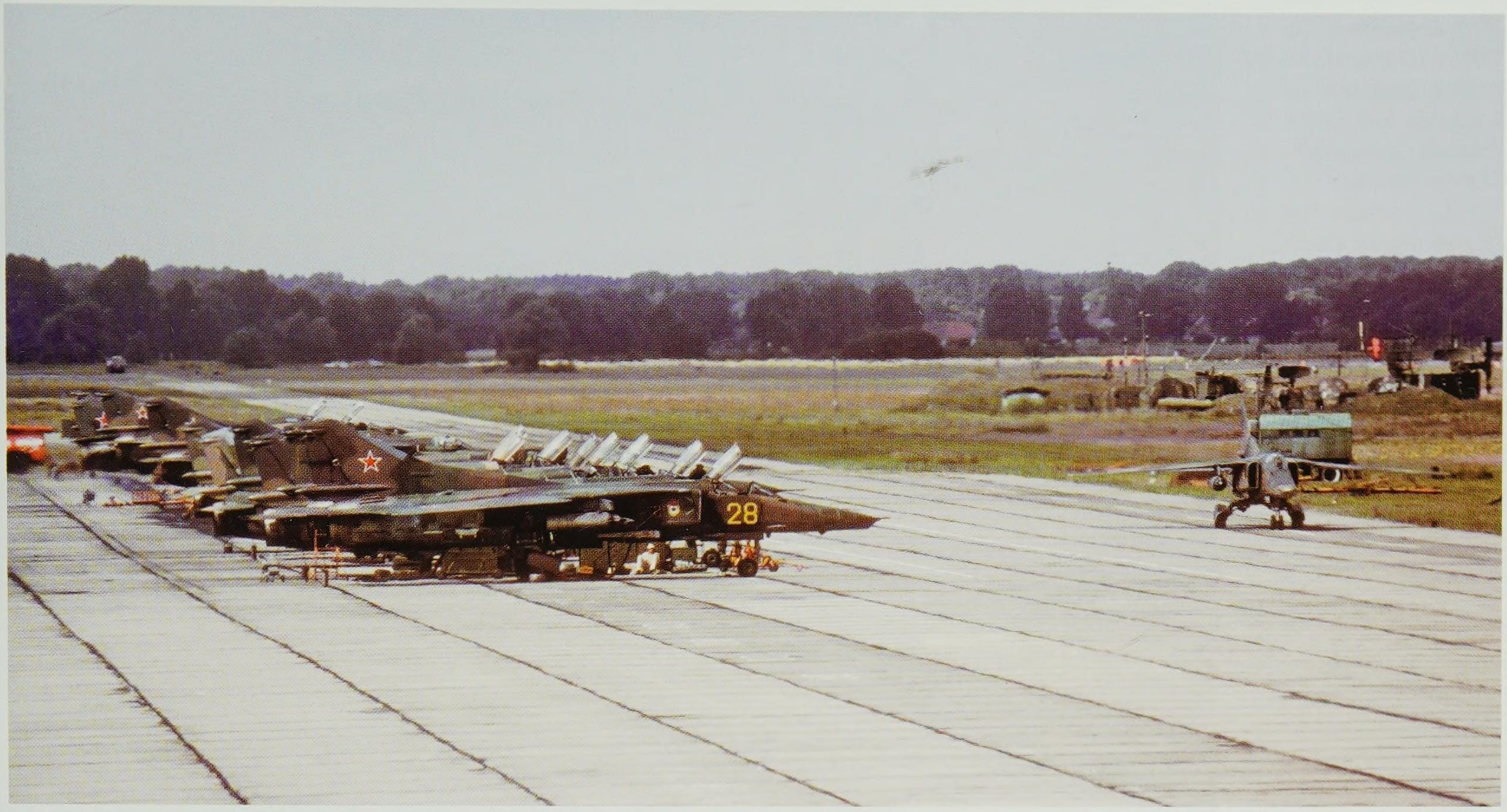
'33 Red', a 833rd IAP MiG-23MLD, on short finals to Jüterbog-Altes Lager AB.



'22 Red', a 787th IAP MiG-23UB, at Finow AB.

559th APIB MiG-23UB '93 Blue' taxies past a sister ship and an APA-5D ground power unit at Fürstenwalde AB.



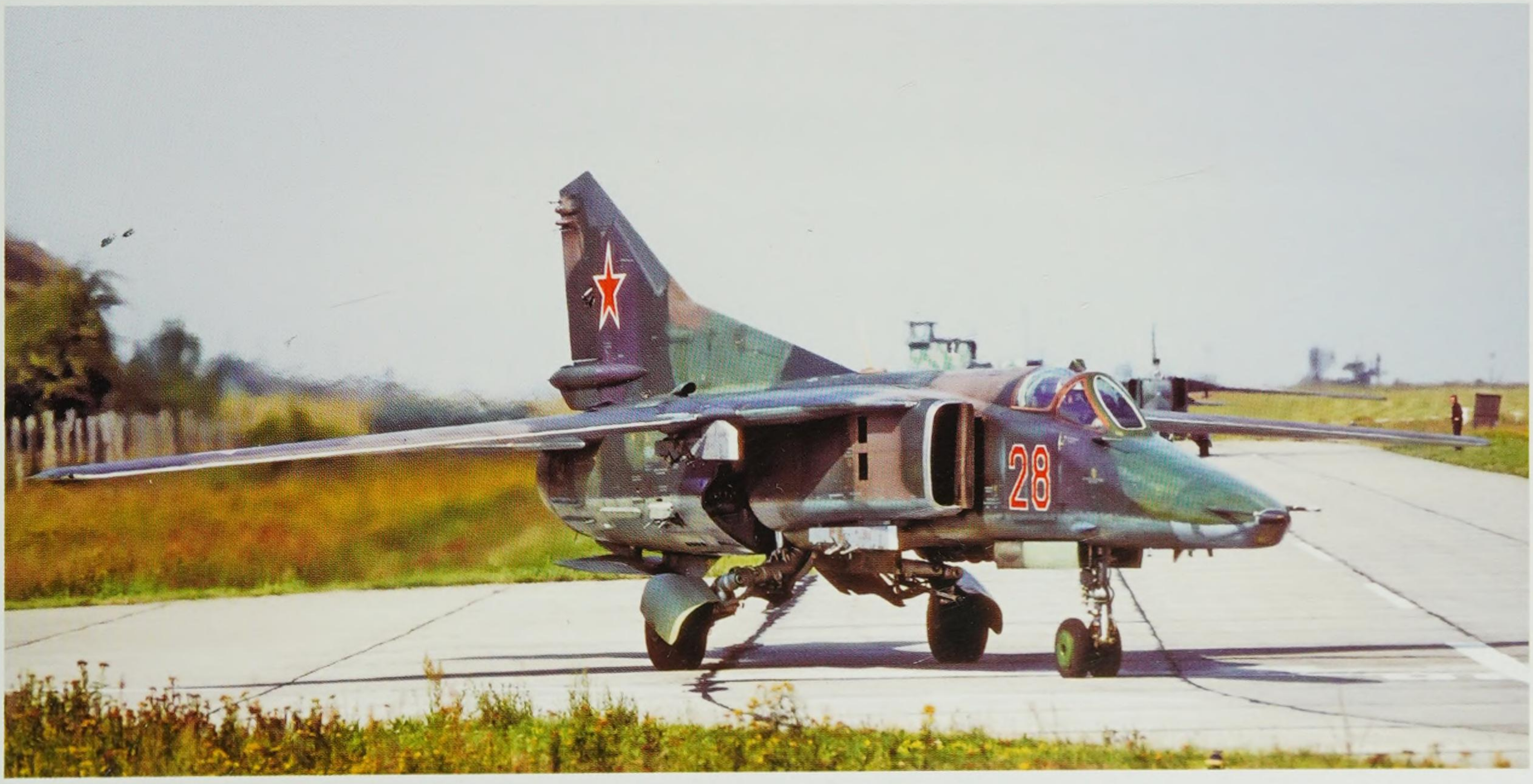


MiG-27Ds of the 19th GvAPIB on the flight line at Lärz AB.

Curiously, the MiG-29s of the 33rd IAP carried a unit badge featuring the regimental number. This was extremely rare in those days of tight security – not to mention that nose art was frowned upon in the VVS. Moreover, six 773rd IAP MiG-29s were repainted on site, receiving a locally invented 'wraparound' olive drab/green-grey camouflage; in the unit they were popularly known as 'the frogs'.

In 1987 the 35th APIB of the 126th GvIAD at Zerbst was transformed into a fighter regiment, re-equipping with MiG-29s (*izdeliye* 9.12) and MiG-29UBs. This was accompanied by a personnel rotation that appeared strange at first glance: the 35th IAP and the Siauliai-based 53rd GvIAP, which was flying MiG-29s then, switched pilots and commanding officers! Yet this move was in fact perfectly logical: as a result, the 16th Air Army immediately came into possession of an entire regiment ready to operate the MiG-29. In April 1988 the 35th IAP took delivery of 28 *Fulcrum-Cs* which replaced some of the unit's original *Fulcrum-As*.

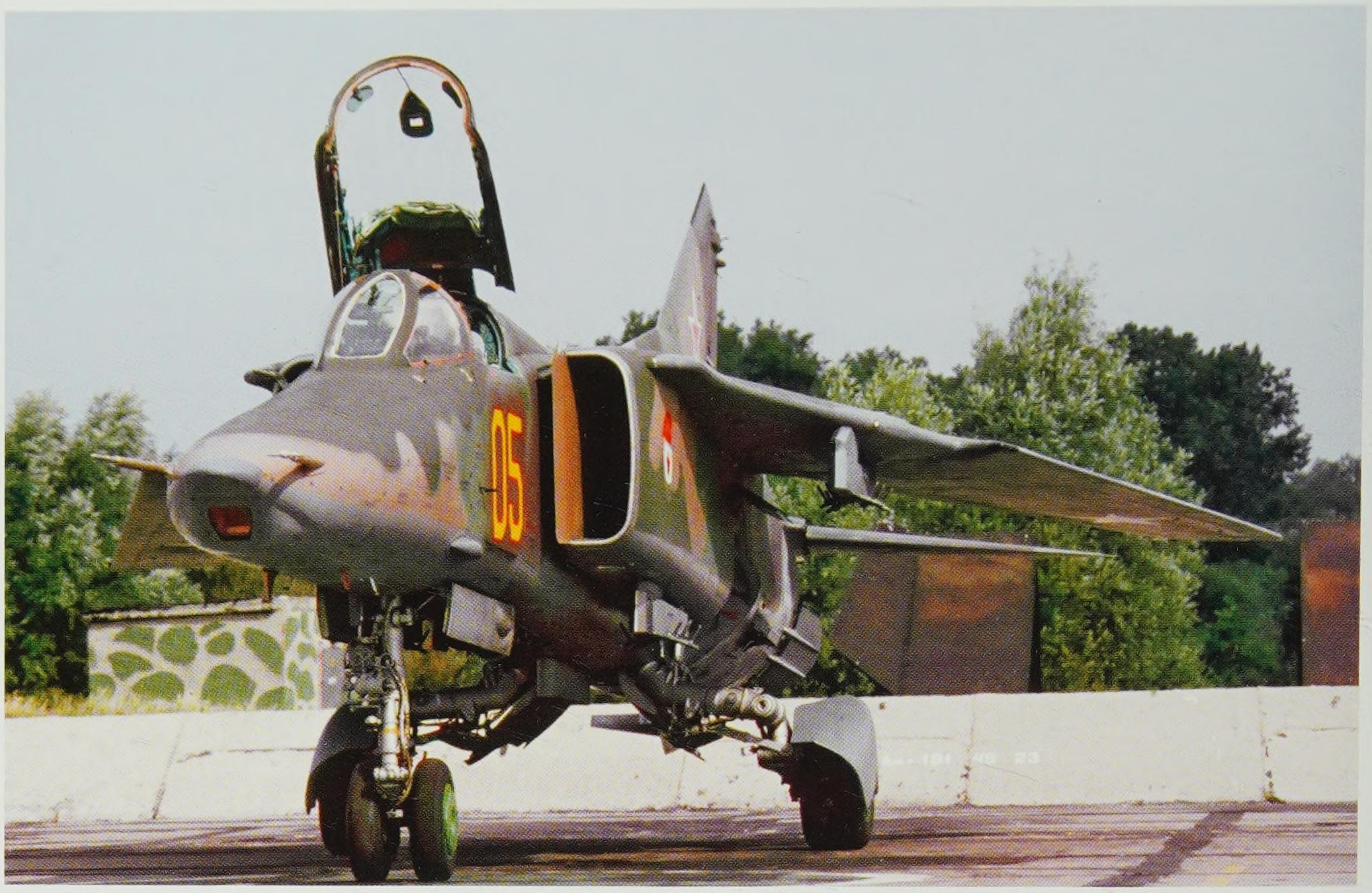
Same number, different colour: MiG-27D '28 Red' of the 296th APIB taxies at Großenhain AB.

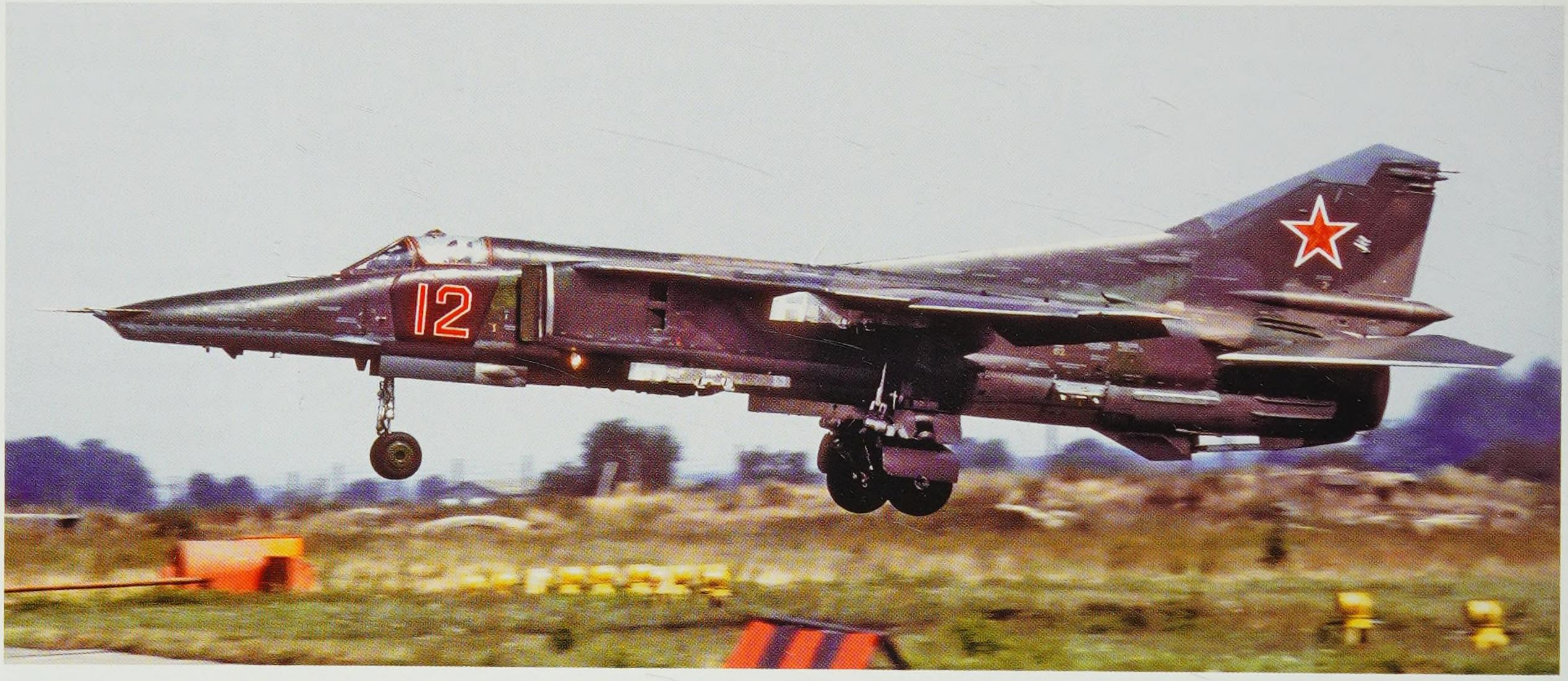


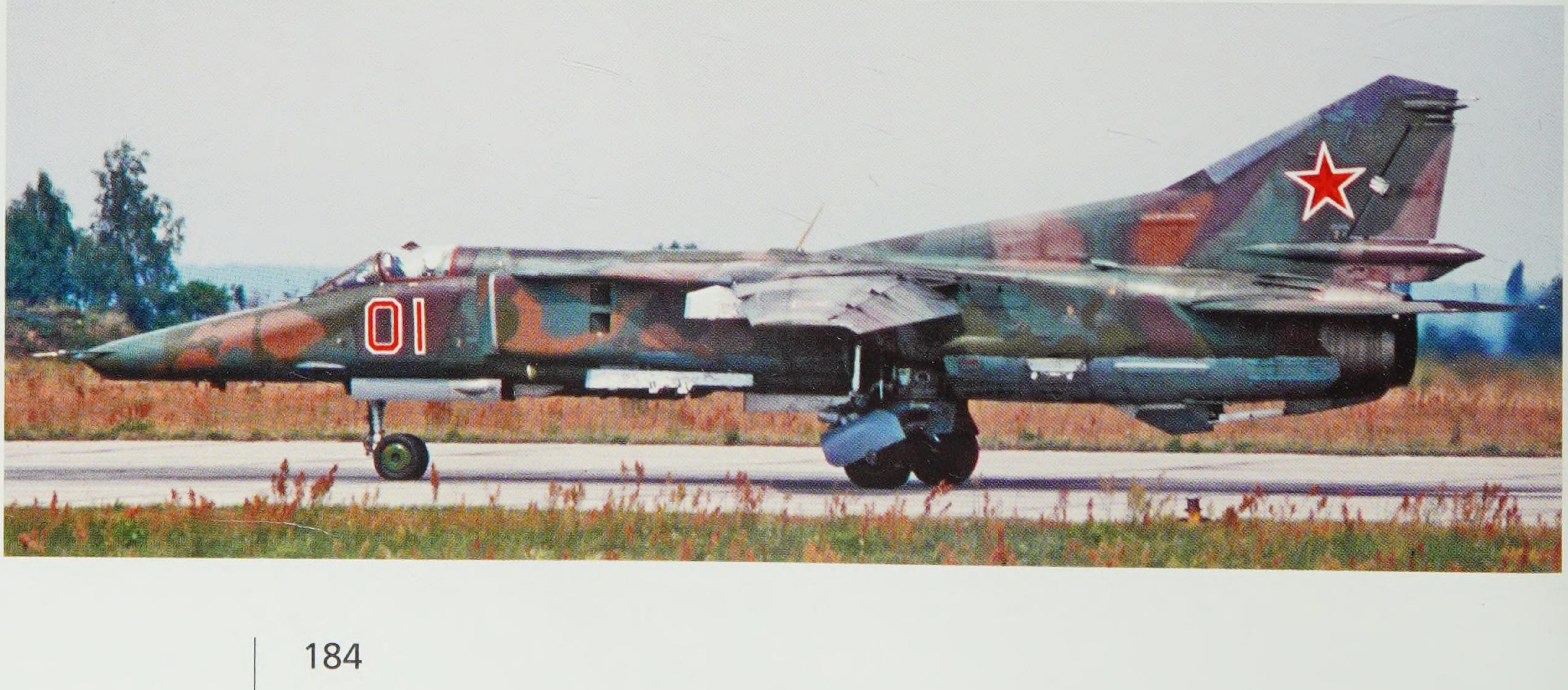
19th GvAPIB MiG-27D '05 Yellow' parked at Lärz AB. Note the Guards badge on the air intake.

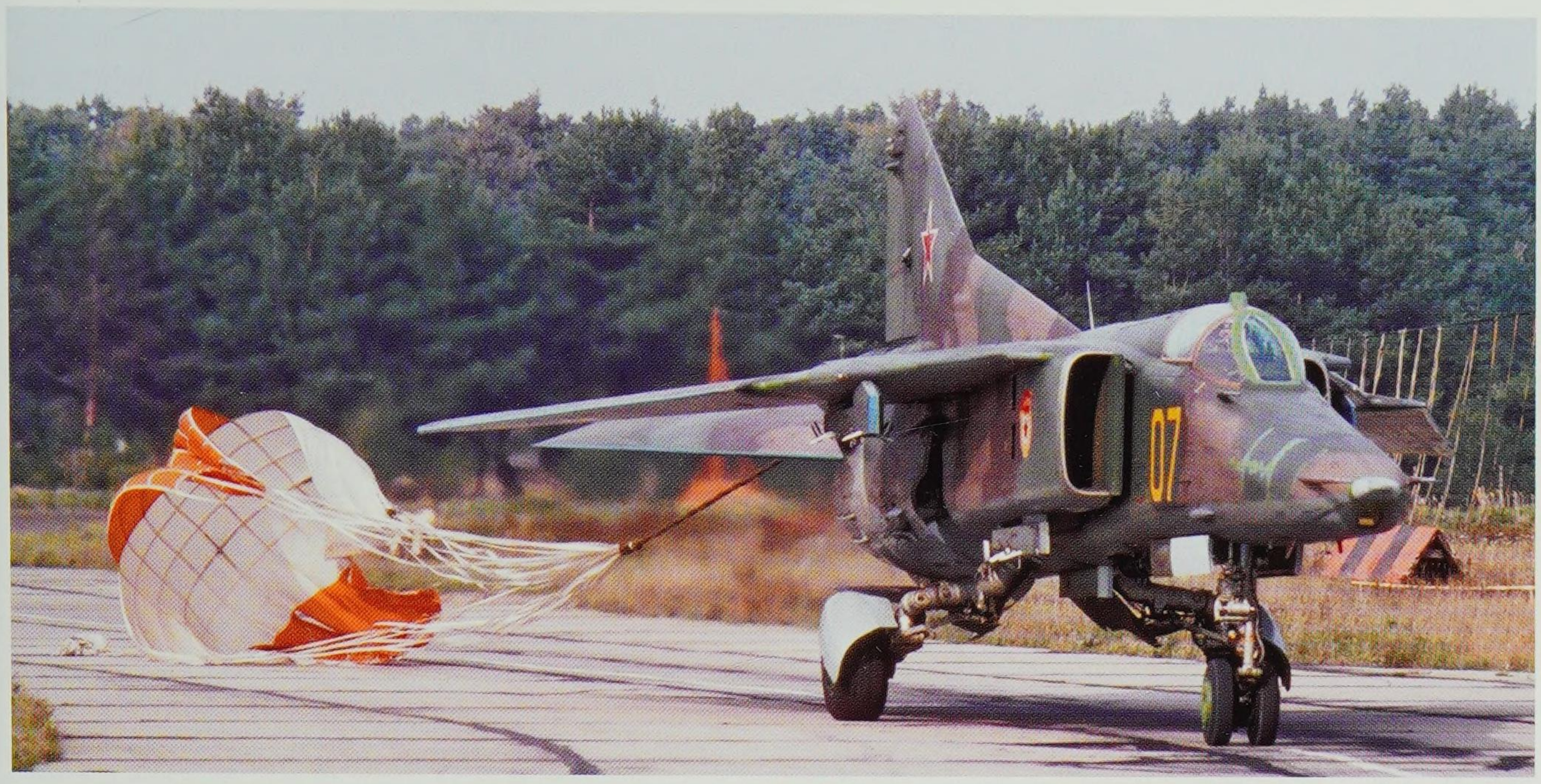
MiG-27M '12 Red' crosses the runway threshold, landing at Großenhain.

A sister ship from the same unit; '01 Red' was the 296th APIB CO's aircraft. Note the difference in camouflage patterns.

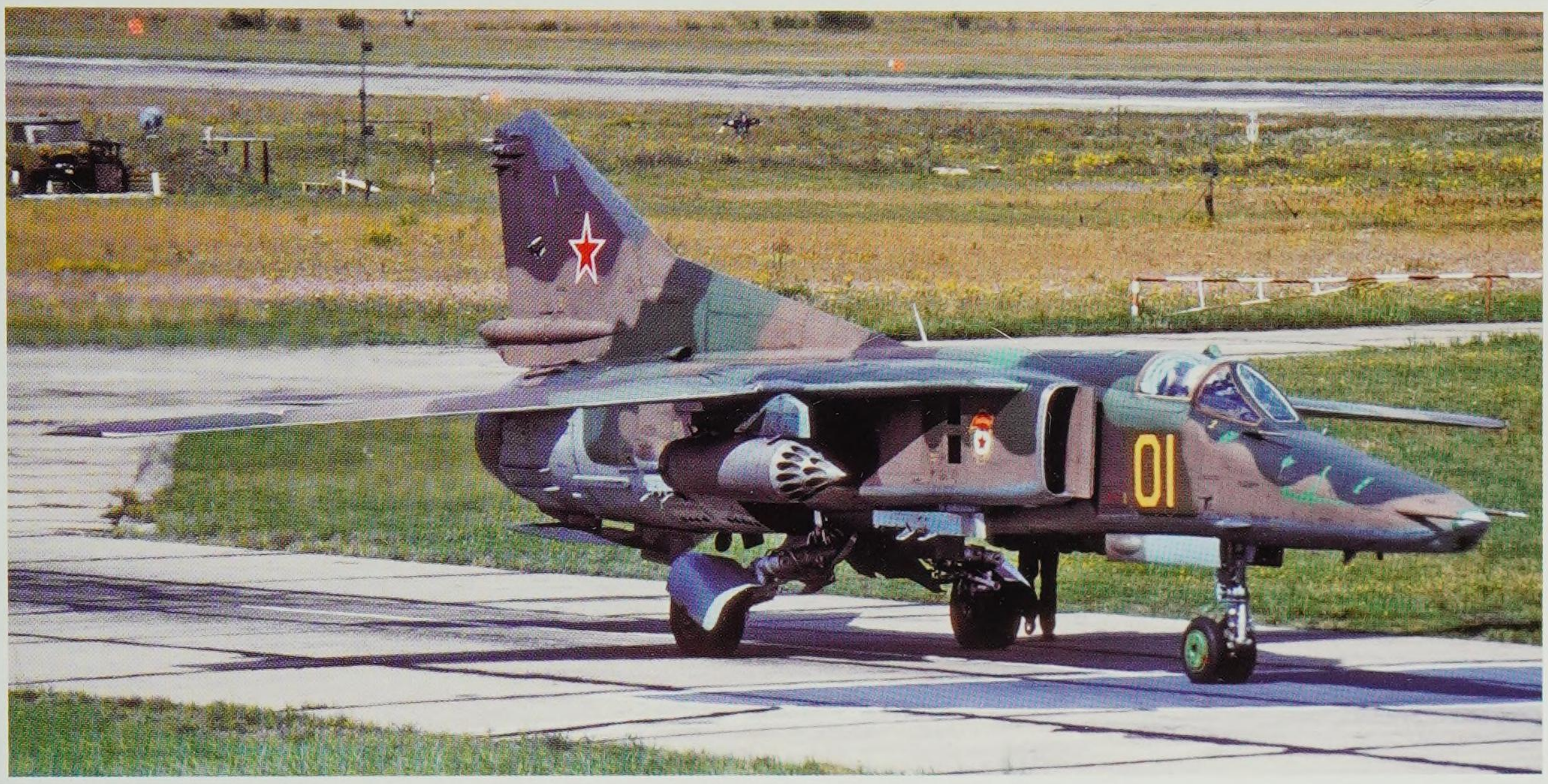






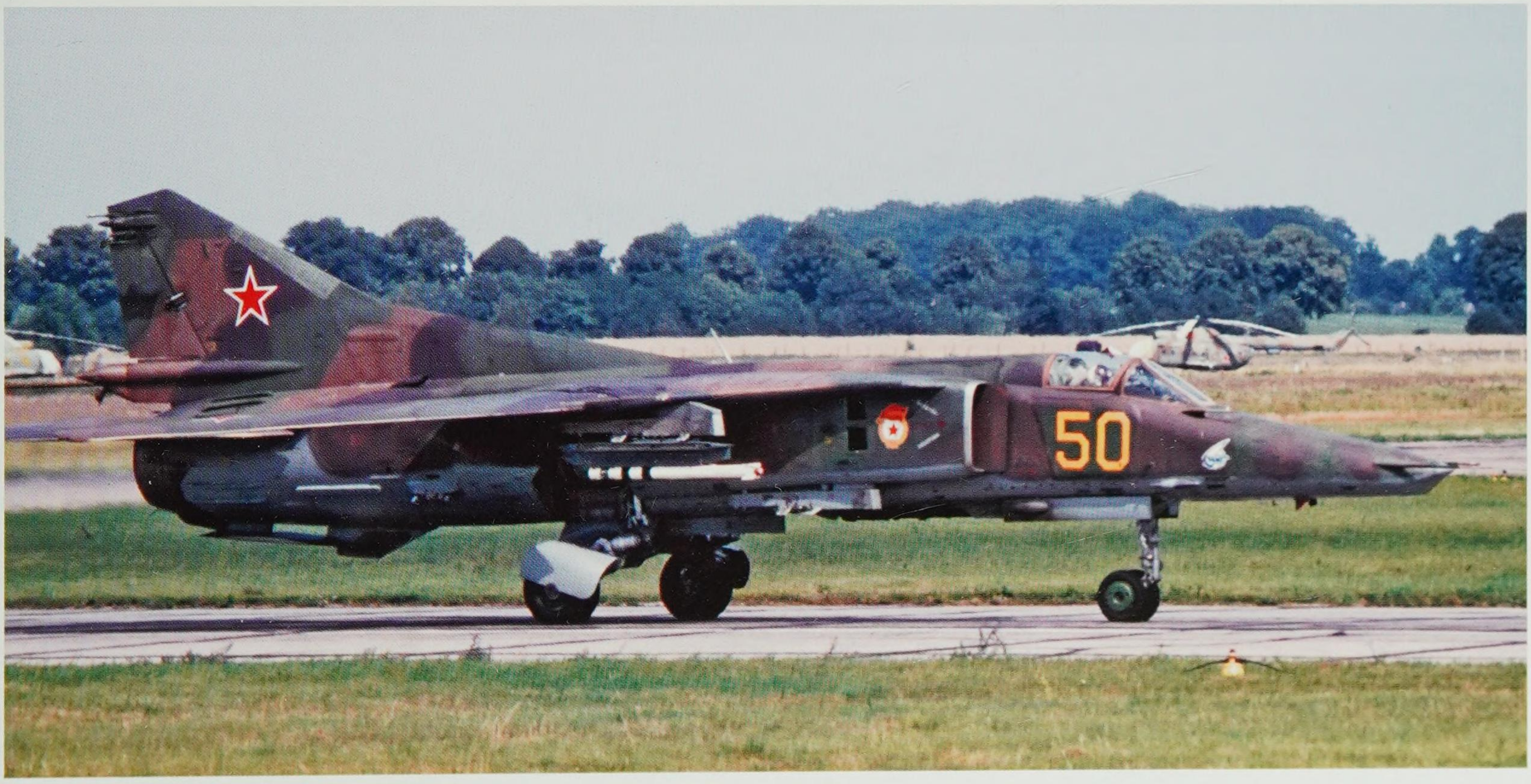


'07 Yellow', another 19th GvAPIB MiG-27D, leaves the runway at Lärz AB, trailing the brake parachute and ready to release it any moment. Note that the wings are already being folded to 72° maximum sweep.

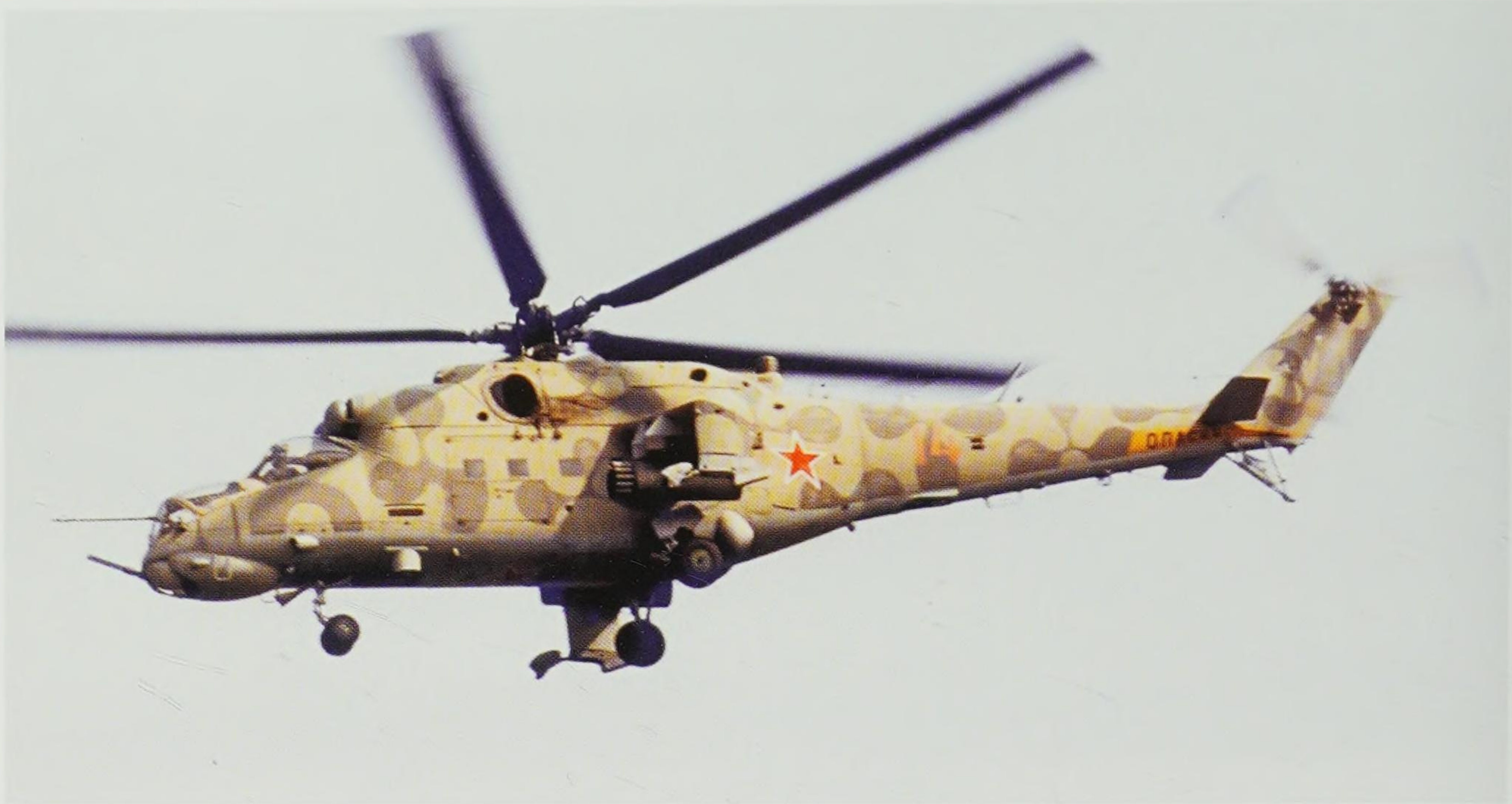


'01 Yellow', a sister ship from the same unit, departs on a practice mission with B-8M1 rocket pods on the wing glove pylons.

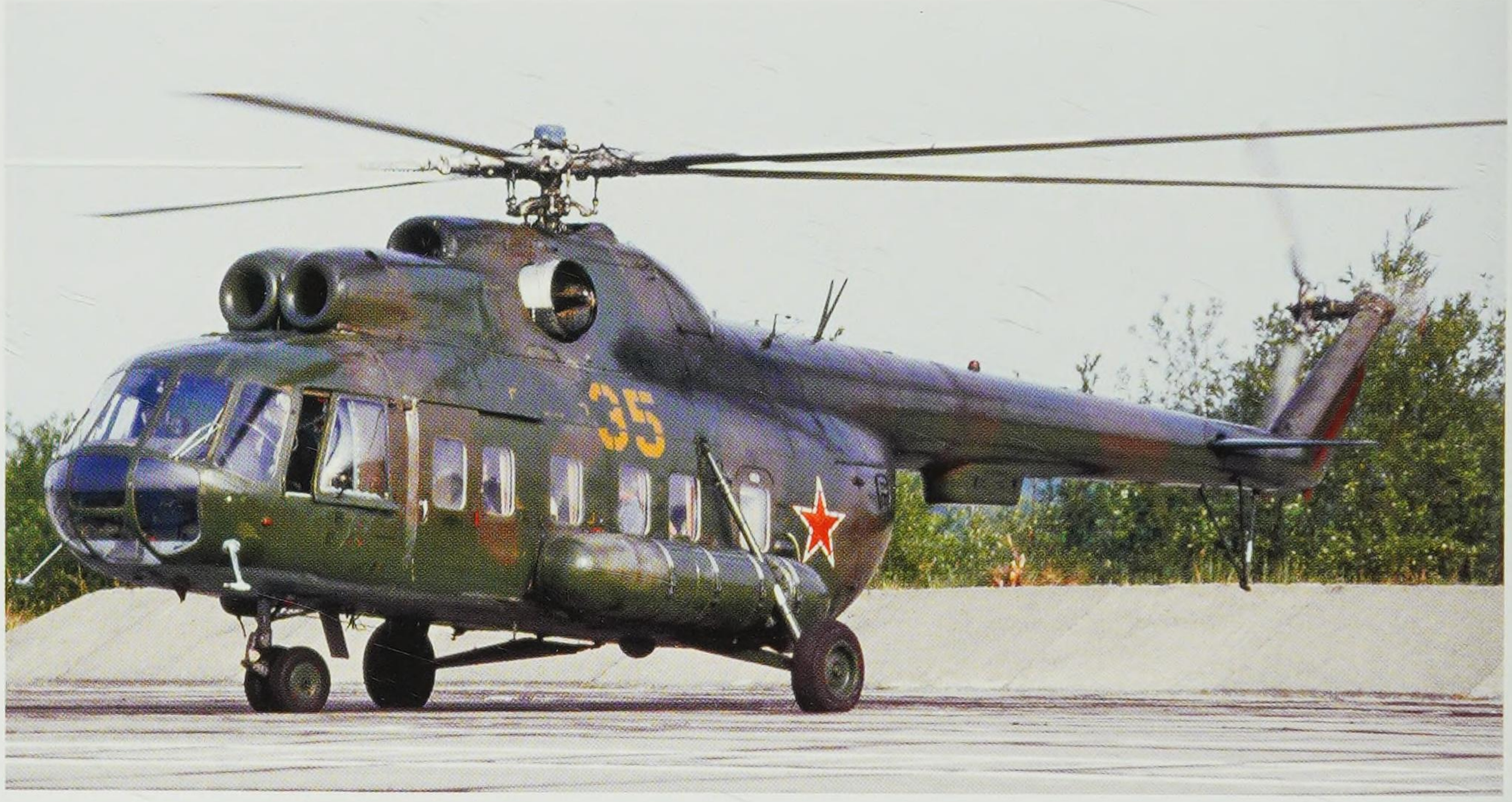
19th GvAPIB MiG-27D '50 Yellow' carries R-60U fixed acquisition round versions of the R-60 AAM.



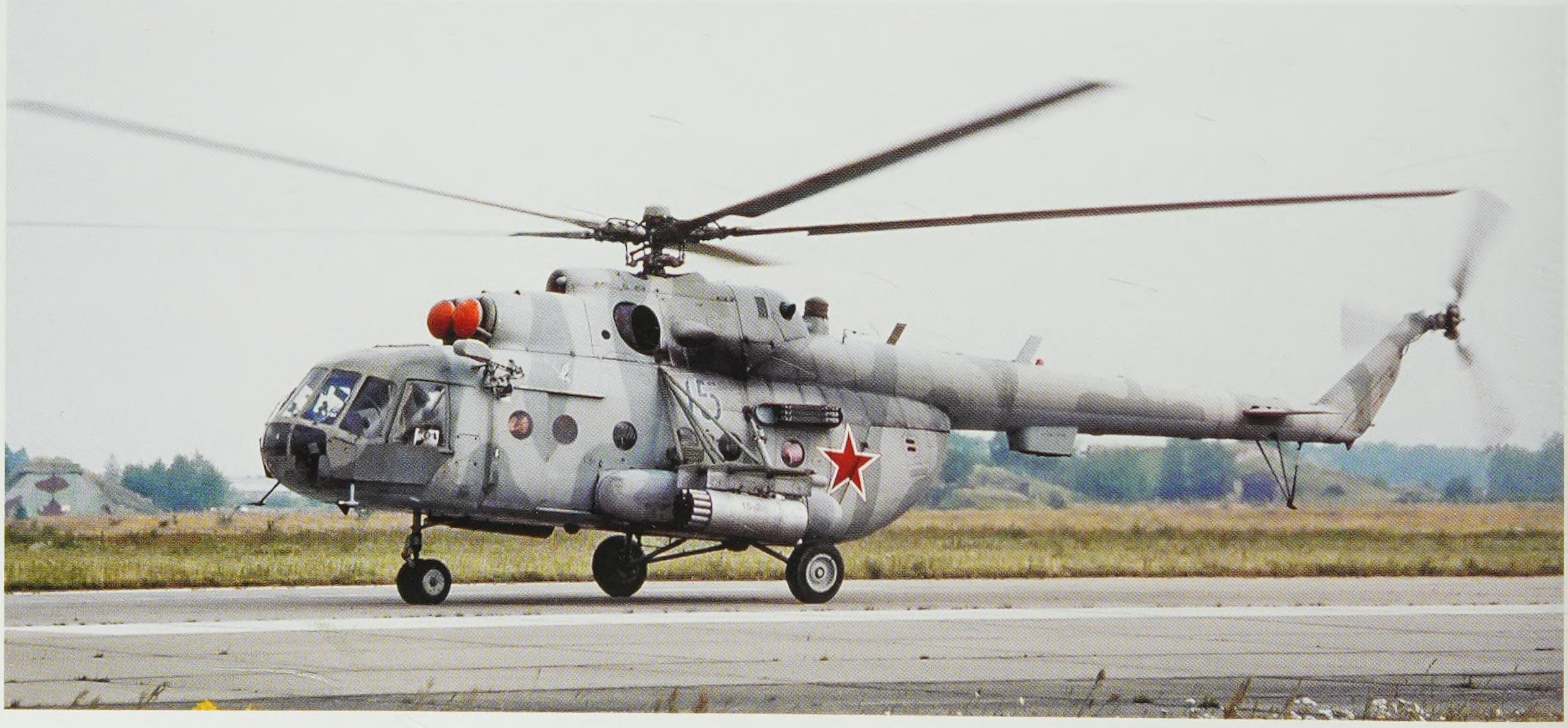
'14 Yellow', one of several Mi-24R NBC reconnaissance helicopters operated by the GSVG. This one belonged to the 41st OVE at Werneuchen.



Mi-8PS VIP helicopters, such as '35 Yellow' from the 226th OSAP at Sperenberg AB, were used as staff transports.



'15 Blue', a Mi-8MT or Mi-8MTV armed with B-8V20 FFAR pods.



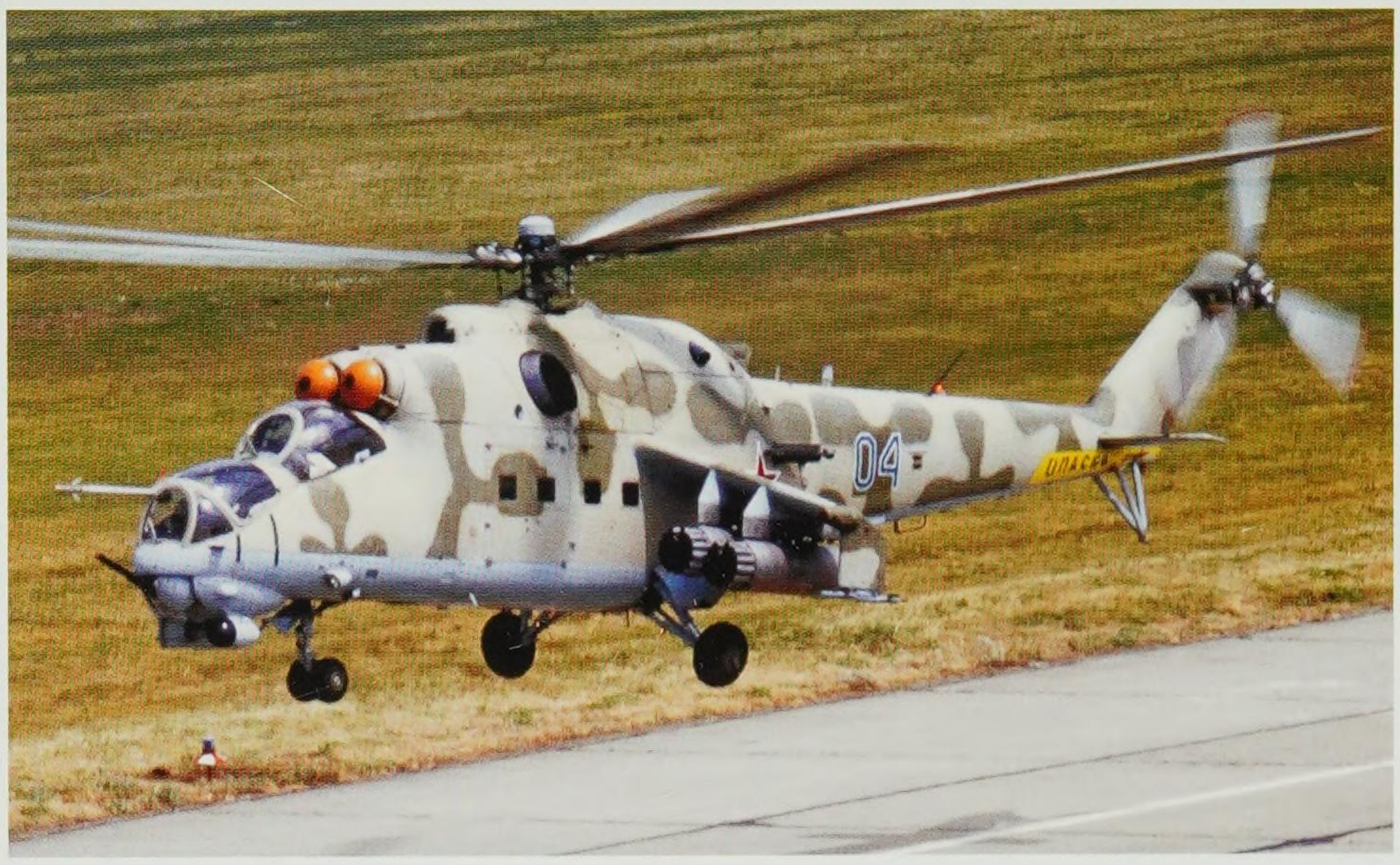
The 73rd GvIAP of the 126th GvIAD based at Köthen also traded its MiG-23MLDs for a mix of *Fulcrum-A/Cs*. In keeping with tradition, the fighters wore the Guards badge to reflect the unit's status. Some of the 73rd GvIAP's MiG-29s were later transferred to the units based at Zerbst and Wittstock.

In 1989 it was the 6th GvIAD/85th GvIAP's turn to re-equip with the MiG-29. Again, the regiment received all three basic versions (*izdeliye* 9.12/9.13 and MiG-29UB). The 31st GvIAP at Falkenberg mastered the MiG-29 in 1989. It, too, operated a mix of all three versions and the aircraft were red-coded; most of them sported the Guards badge. The 6th GvIAD's third unit to re-equip was the 968th IAP, which was transferred to the 16th VA from Belorussia in July 1989 and stationed at Altenburg, replacing the 296th APIB flying MiG-27s. The 968th IAP was the only Soviet unit stationed abroad to be equipped entirely with *Fulcrum-As*, though not for long; soon the unit received 12 brand-new *Fulcrum-Cs* as a replacement for fighters due for an overhaul.

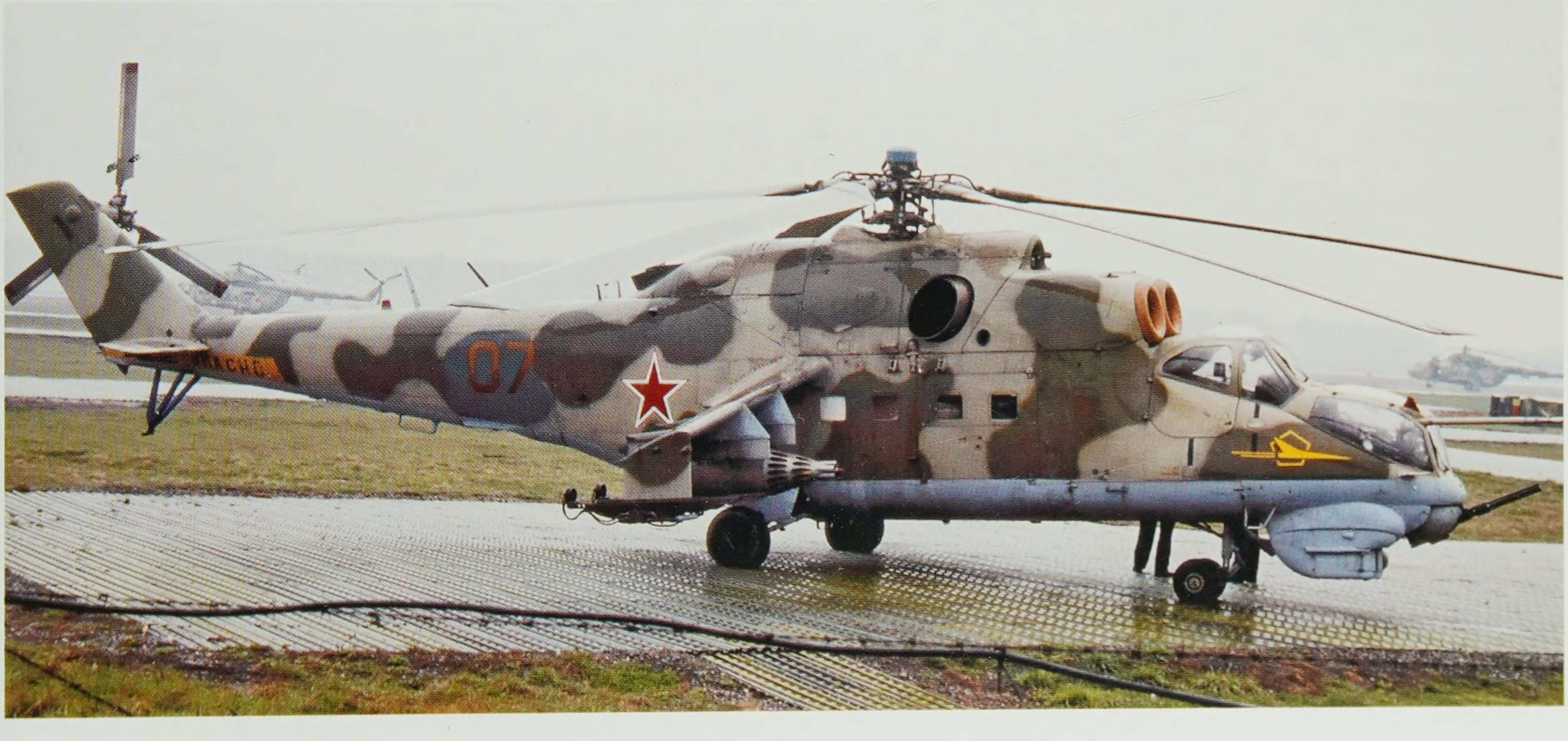
Fighter-bombers were another major class of aircraft in the 16th Air Army. The MiG-17F was operated in the fighter-bomber role in 1956-1967 until replaced by the Su-7B. The 19th GvIBAP operated the MiG-17F/PF at Lärz; the 296th IBAP was stationed at Großenhain. The 125th IBAD/20th GvIBAP was consecutively based at Neu-Welzow, Damgarten and Parchim. The 730th IBAP was based at Neuruppin, the 911th IBAP at Brand, while the 105th ADIB/559th IBAP moved from Falkenberg to Großenhain, Altenburg and finally Finsterwalde. Other bases used by GSVG MiG-17s included Brandis, Cottbus, Erfurt (1953), Finow (1954-56), Haßleben, Lärz, Stendal and Wittenberg.

On one occasion when the local authorities had neglected to warn the Soviet military of an impending test flight, 296th IBAP MiG-17Fs intercepted an East German civil-registered IL-28R (DM-ZZK) used as an engine testbed. The MiG pilots had expected to find a Western spyplane; luckily the situation was quickly clarified when the justifiably alarmed pilot called the tower, which promptly called the Soviet base and straightened things out.

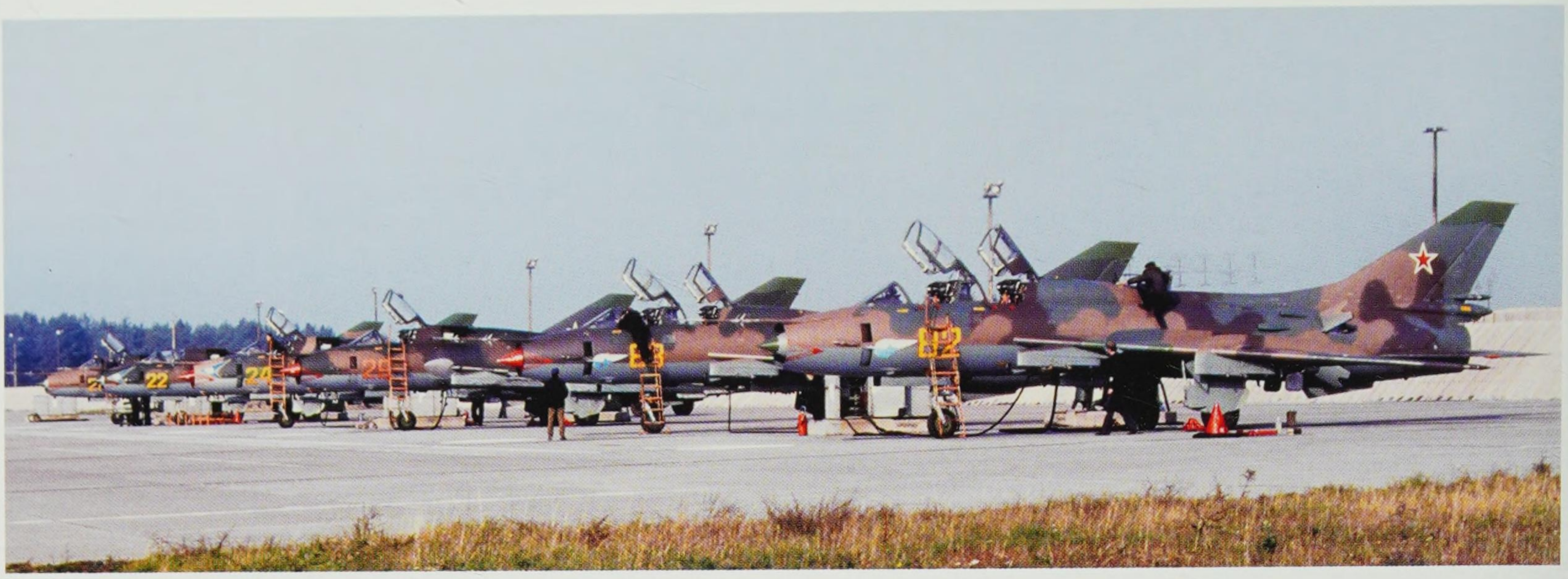
MiG-17 operations in Germany had their share of accidents. On 26th April 1964 a 559th APIB aircraft crashed near Finsterwalde (this is unconfirmed – some sources state the type as a Su-7). However, there are worse things than a crash. On 25th May 1967 a Soviet pilot escaped to West Germany in a MiG-17F fighter-bomber coded '25 Blue',

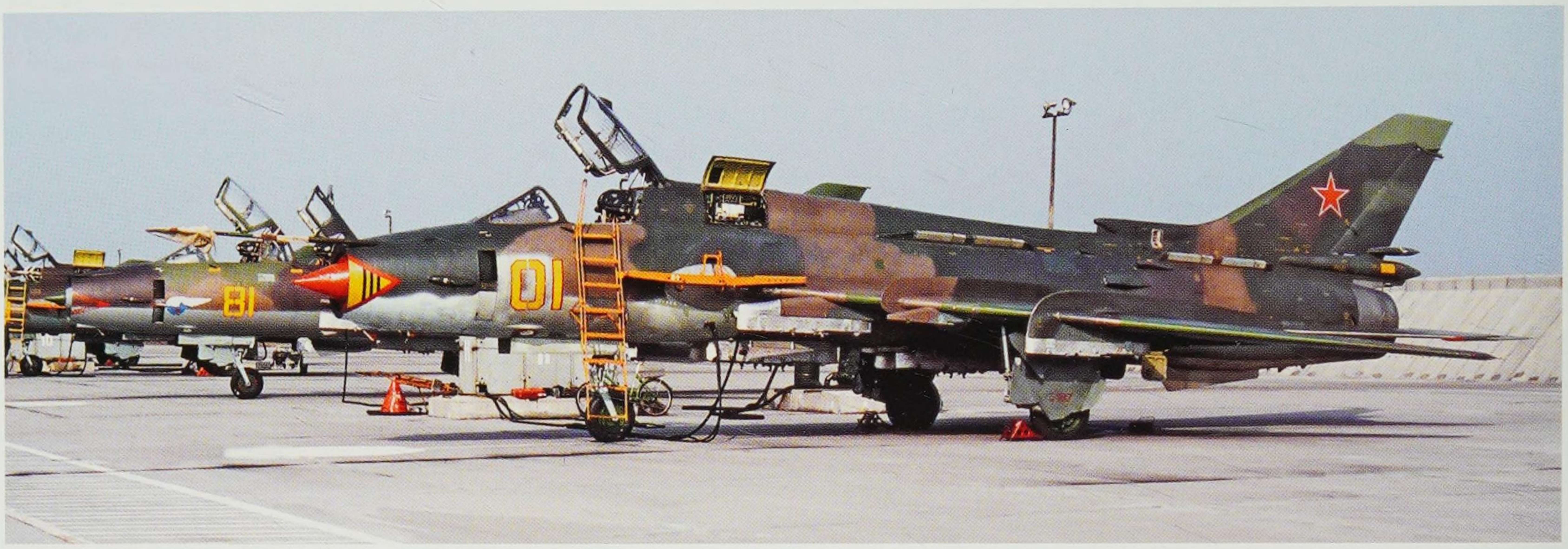


Mi-24V '04 Blue' with 'eyes' painted on the air intake filters belonged to the 487th OBVP at Werneuchen.



The Mi-24D served with the GSVG in small numbers. '07 Yellow' parked on a PSP-covered hardstand wears the 'Excellent aircraft' maintenance award badge.



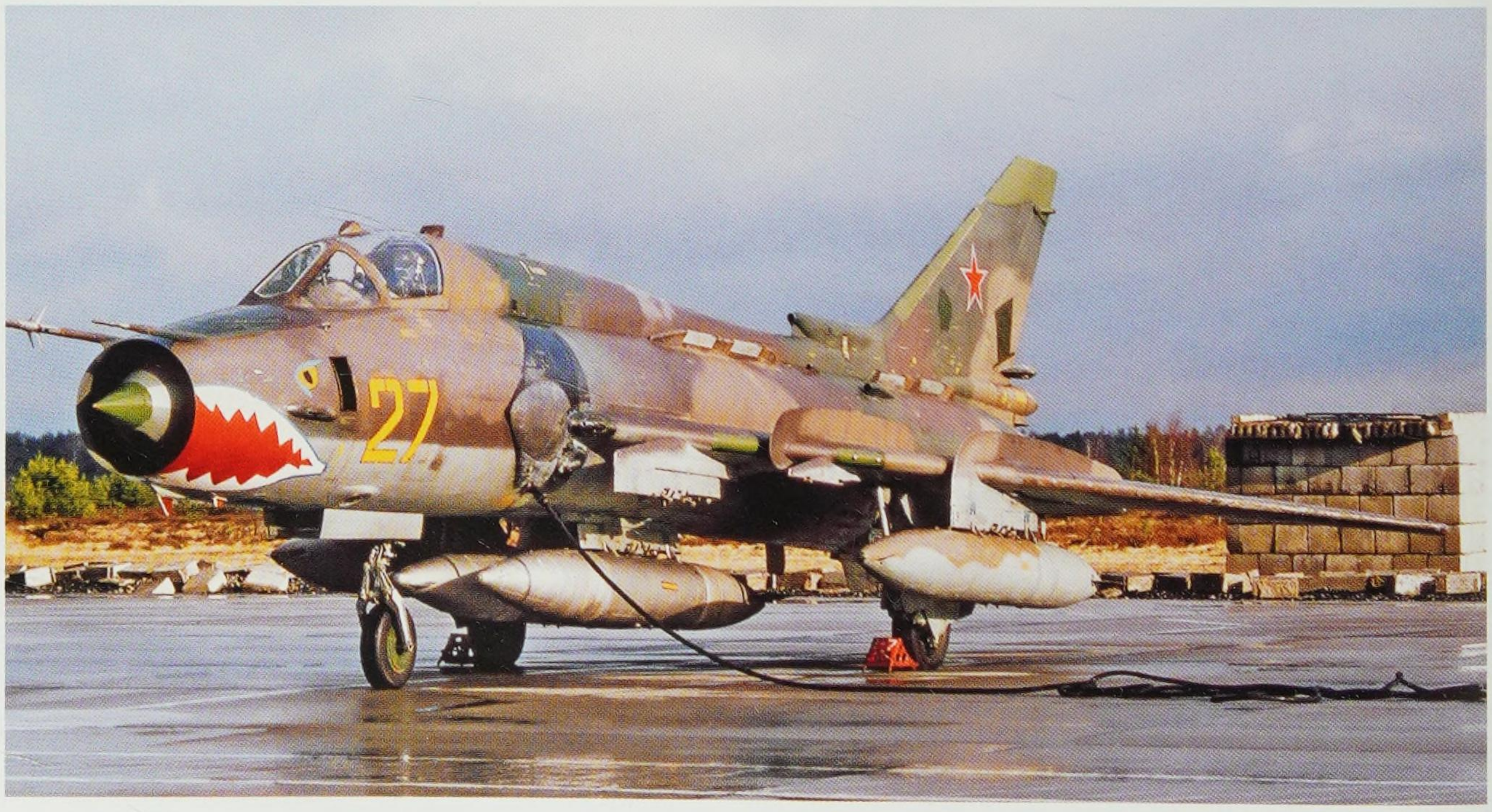


Top: 20th GvAPIB Su-17M4s and Su-17UM3s on the flight line at Groß-Dölln AB. Some of the single-seaters carry squadron badges.

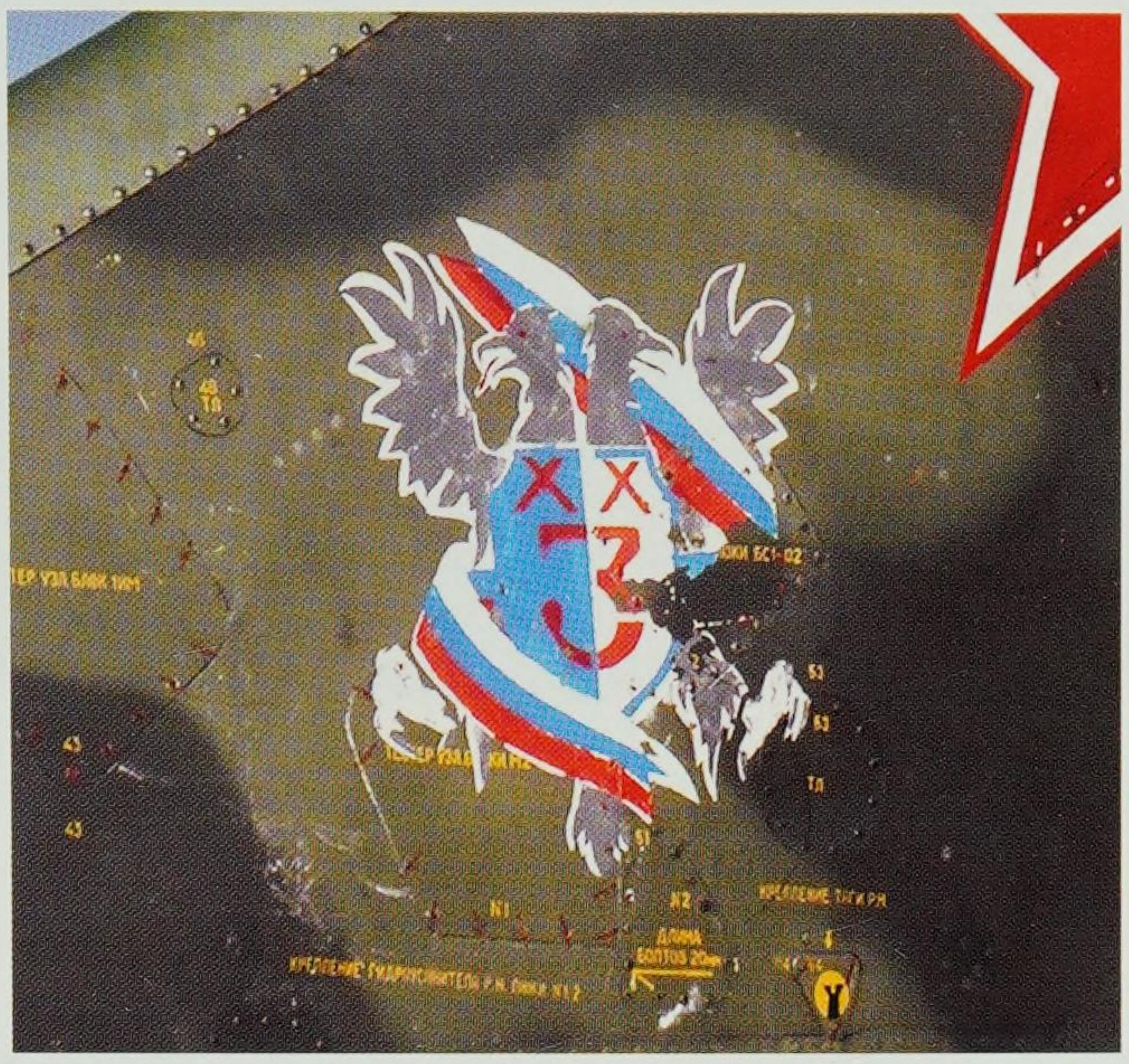
'01 Yellow', the 20th GvAPIB Commander's aircraft.

making a perfect belly landing near Dillingen, some 100 km (62 miles) from Stuttgart and seeking political asylum. The aircraft (but not the pilot) was returned four days later via the border crossing at Herleshausen.

The GSVG had five units operating the Su-7B *Fitter-A* fighter-bomber; these began re-equipping wholesale in the mid-1960s and operated from six bases. Lärz AB hosted the 125th IBAD/19th GvIBAP. The 125th IBAD/ 20th GvIBAP operating a mix of Su-7Bs/BMs and MiG-17Fs since 1965 was originally stationed at Parchim, but then moved to Templin (aka Groß-Dölln) in the autumn of 1969.



'27 Yellow', the 20th GvAPIB's sole *Fitter-K* to sport a sharkmouth.

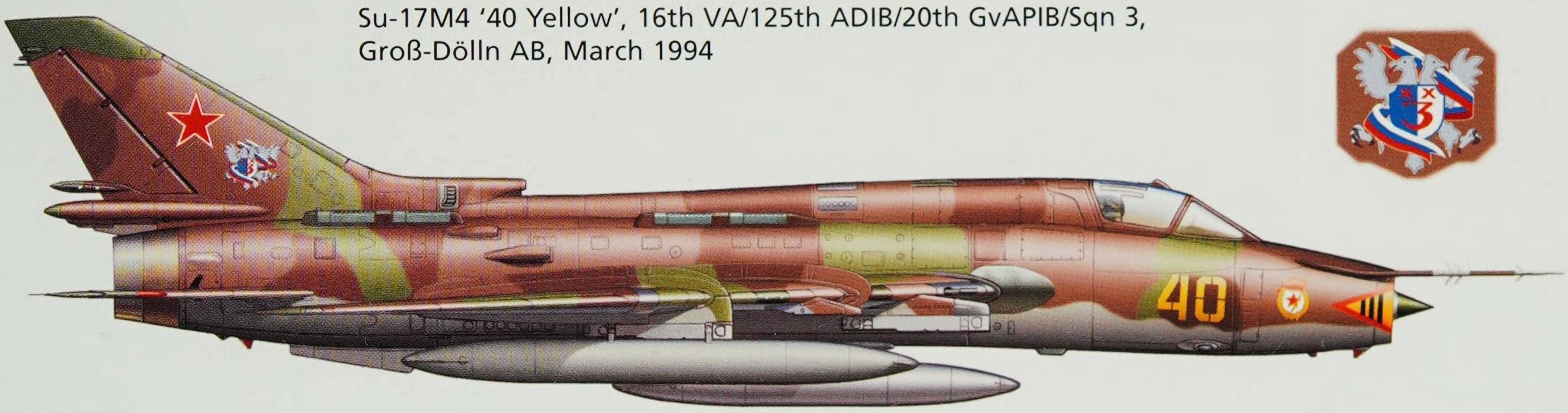


The badge of the 20th GvAPIB/Sqn 3 in the shape of the Russian double-headed eagle with a shield; the 'XX' at the top is the regiment number in Roman numerals.

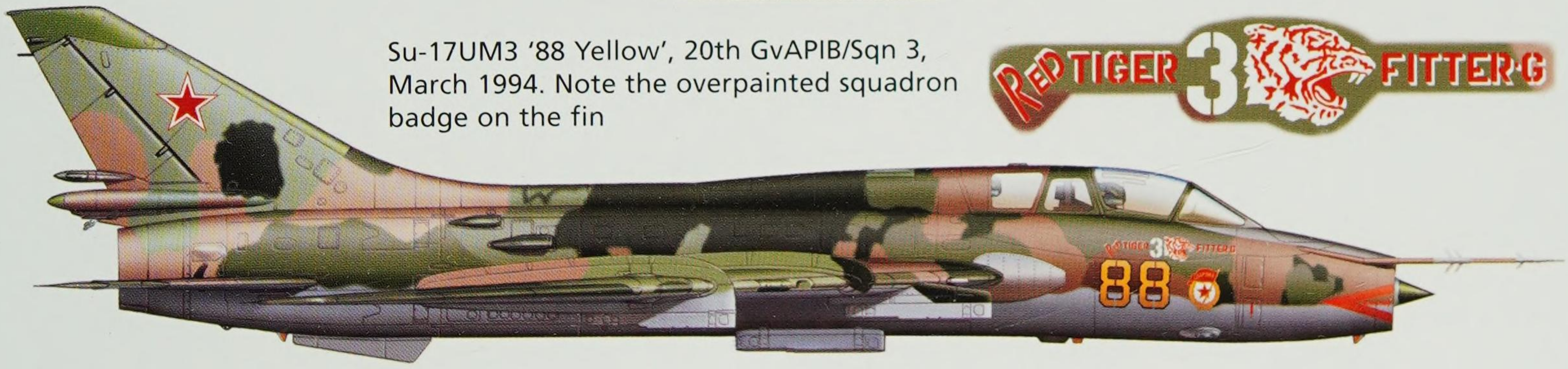
Großenhain AB hosted the 105th IBAD/497th IBAP operating Su-7Bs/BMs. The 559th IBAP based at Finsterwalde AB received its Su-7Bs in 1963 and kept them all the way until 1976 when it converted to the MiG-27. The final GSVG unit to operate the type was the 116th GvAPIB stationed at Brand AB; it was late in converting to the *Fitter-A*, receiving several Su-7Bs from the units at Finsterwalde, Lärz and Großenhain; one of the unit's squadrons continued flying MiG-17Fs.

In 1973-74 the 20th GvIBAP became the first Soviet Air Force unit to re-equip with the then-latest Su-17M *Fitter-C* 'swing-wing' fighter-bomber. The first Su-17Ms were delivered to the 125th IBAD/20th GvIBAP at Groß-Dölln in 1976. Soon this unit – now known as the 20th GvAPIB – converted to the Su-17M2 *Fitter-D* (1976-81), followed by the Su-17M3 *Fitter-H* (1981-91) and Su-17M4 *Fitter-K* fighter-bombers, plus the Su-17UM3 *Fitter-G* training version (1988-94). Due to major runway resurfacing work at Templin in 1987 the unit redeployed to Finow AB for several months. Oddly, not all 20th GvAPIB aircraft wore the Guards badge that went with the unit's Guards status.

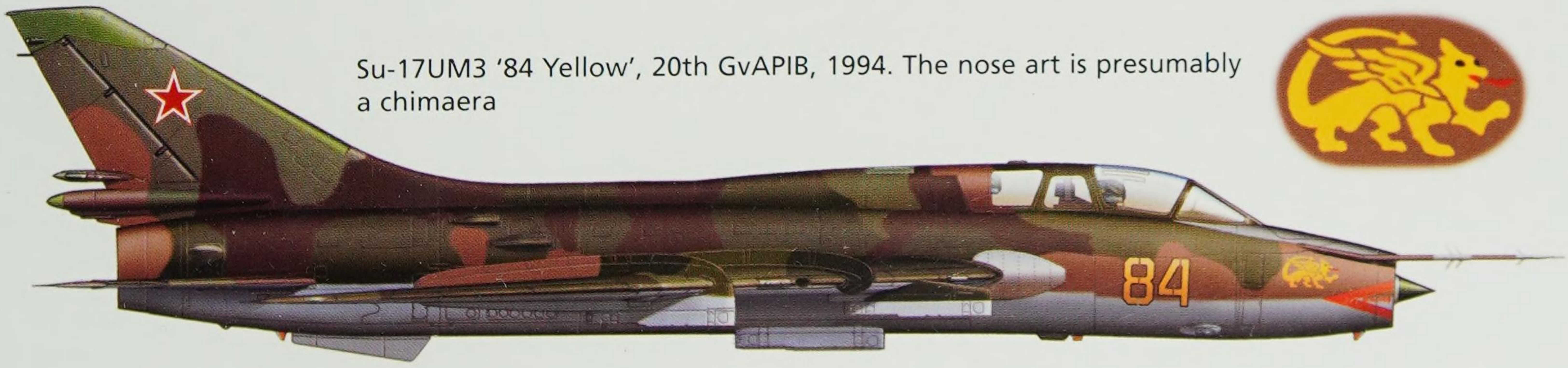
Later, the 497th APIB at Großenhain re-equipped with the Su-17M, followed by the 125th ADIB/730th APIB at Neuruppin in 1978. The latter unit later converted to the Su-17M4 and Su-17UM3. The 730th APIB pulled out in April 1991, ceding some aircraft to the 20th GvAPIB, which left Templin on 5th April 1994.



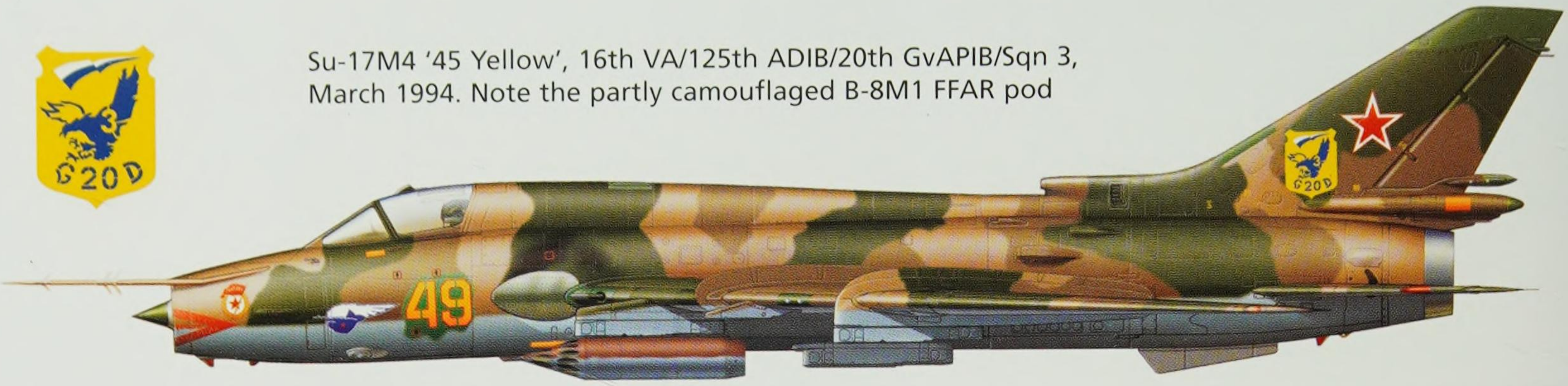
Su-17M4 '40 Yellow', 16th VA/125th ADIB/20th GvAPIB/Sqn 3, Groß-Dölln AB, March 1994



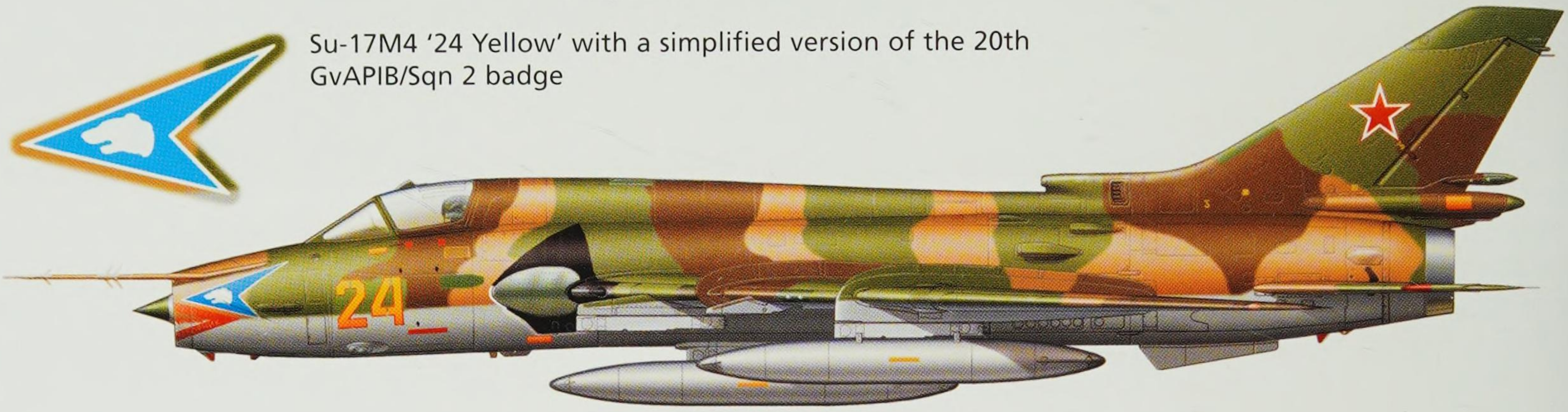
Su-17UM3 '88 Yellow', 20th GvAPIB/Sqn 3, March 1994. Note the overpainted squadron badge on the fin



Su-17UM3 '84 Yellow', 20th GvAPIB, 1994. The nose art is presumably a chimaera



Su-17M4 '45 Yellow', 16th VA/125th ADIB/20th GvAPIB/Sqn 3, March 1994. Note the partly camouflaged B-8M1 FFAR pod

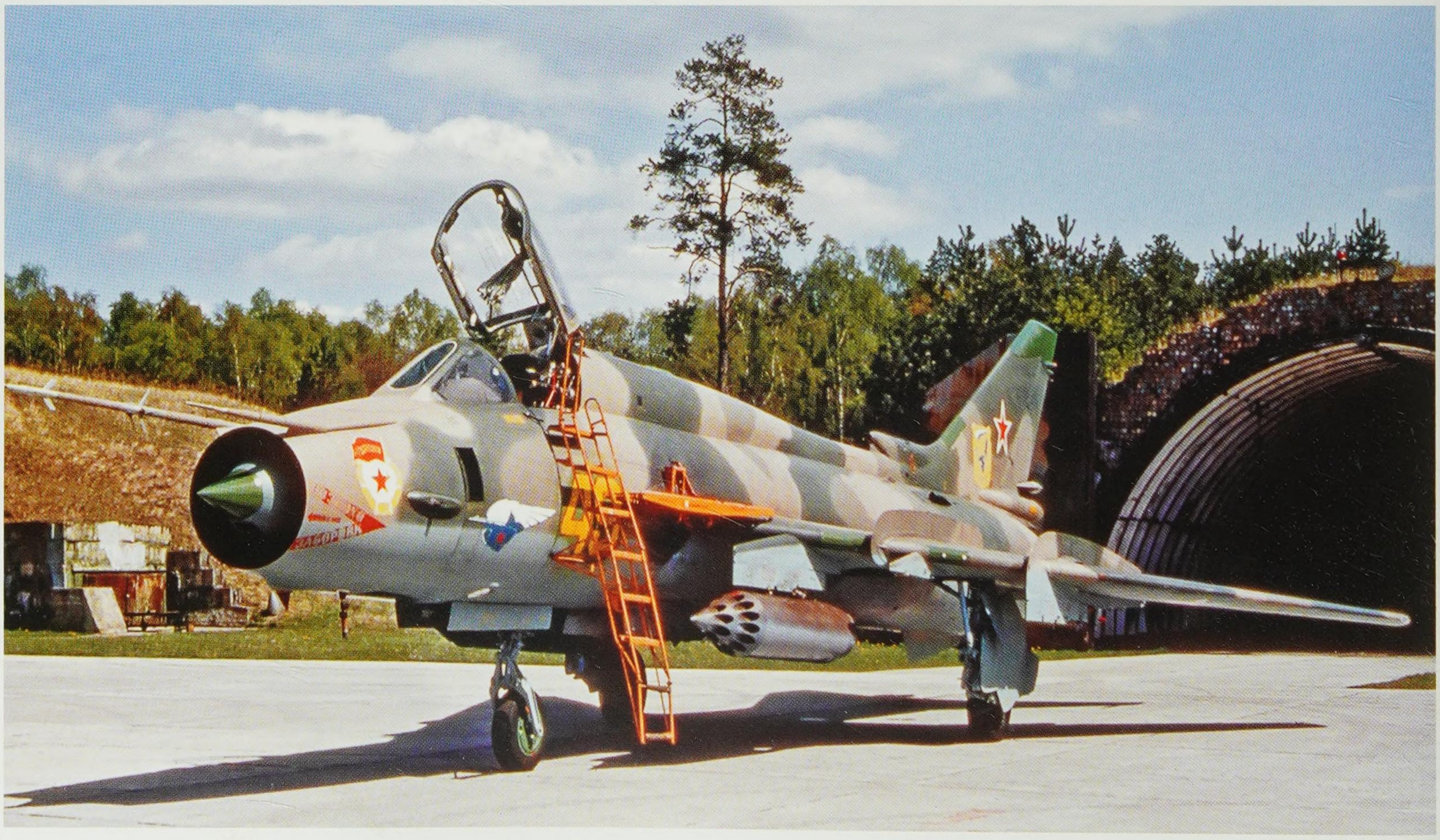


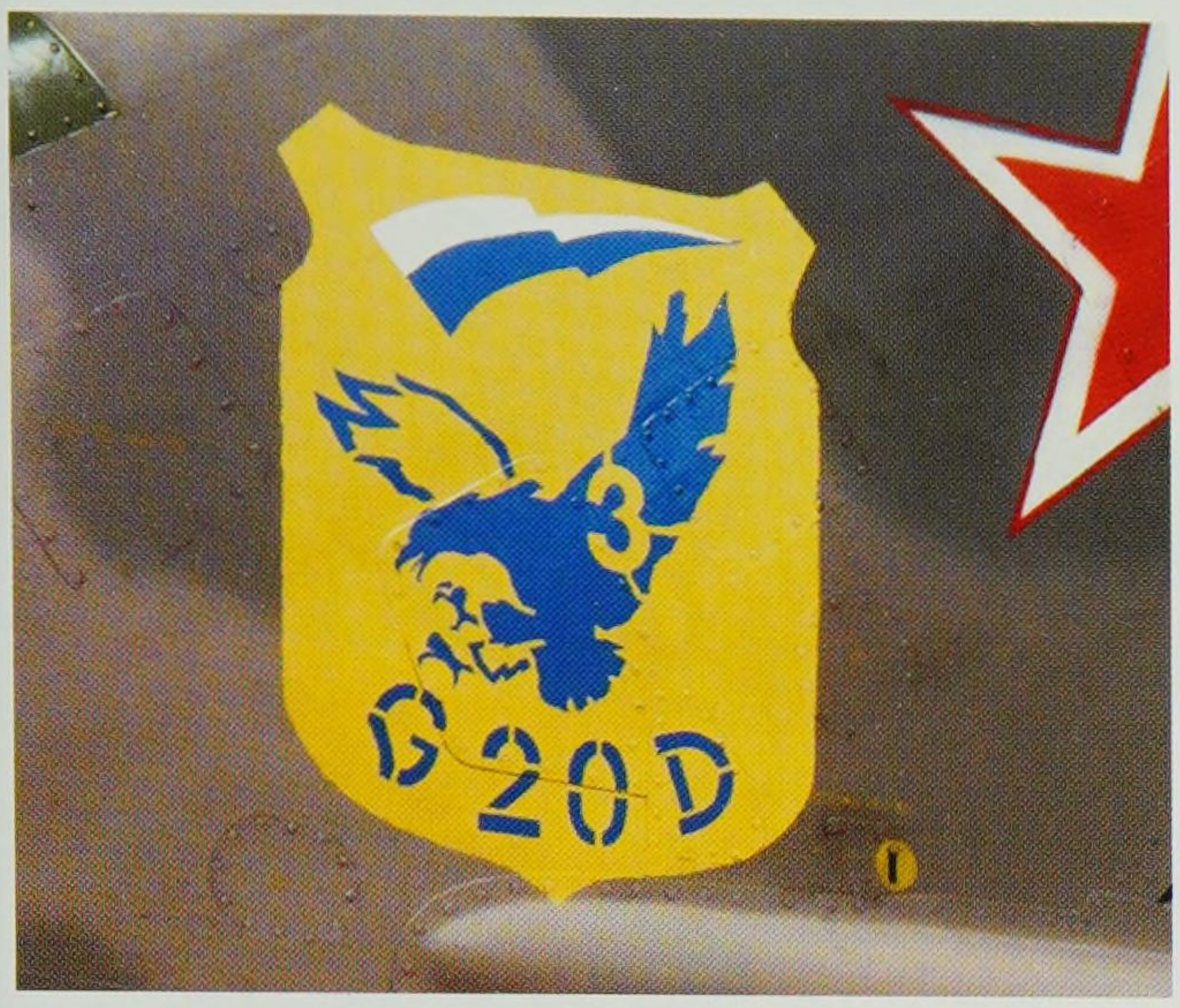
Su-17M4 '24 Yellow' with a simplified version of the 20th GvAPIB/Sqn 2 badge

Apart from regular bases, GSVG *Fitters* periodically operated from straight sections of highways which were used as reserve airstrips. For example, the 730th APIB made use of the Netzeband Highway Strip (East German codename 'Puma') located on motorway 24 between the Walsleben and Herzsprung exits.

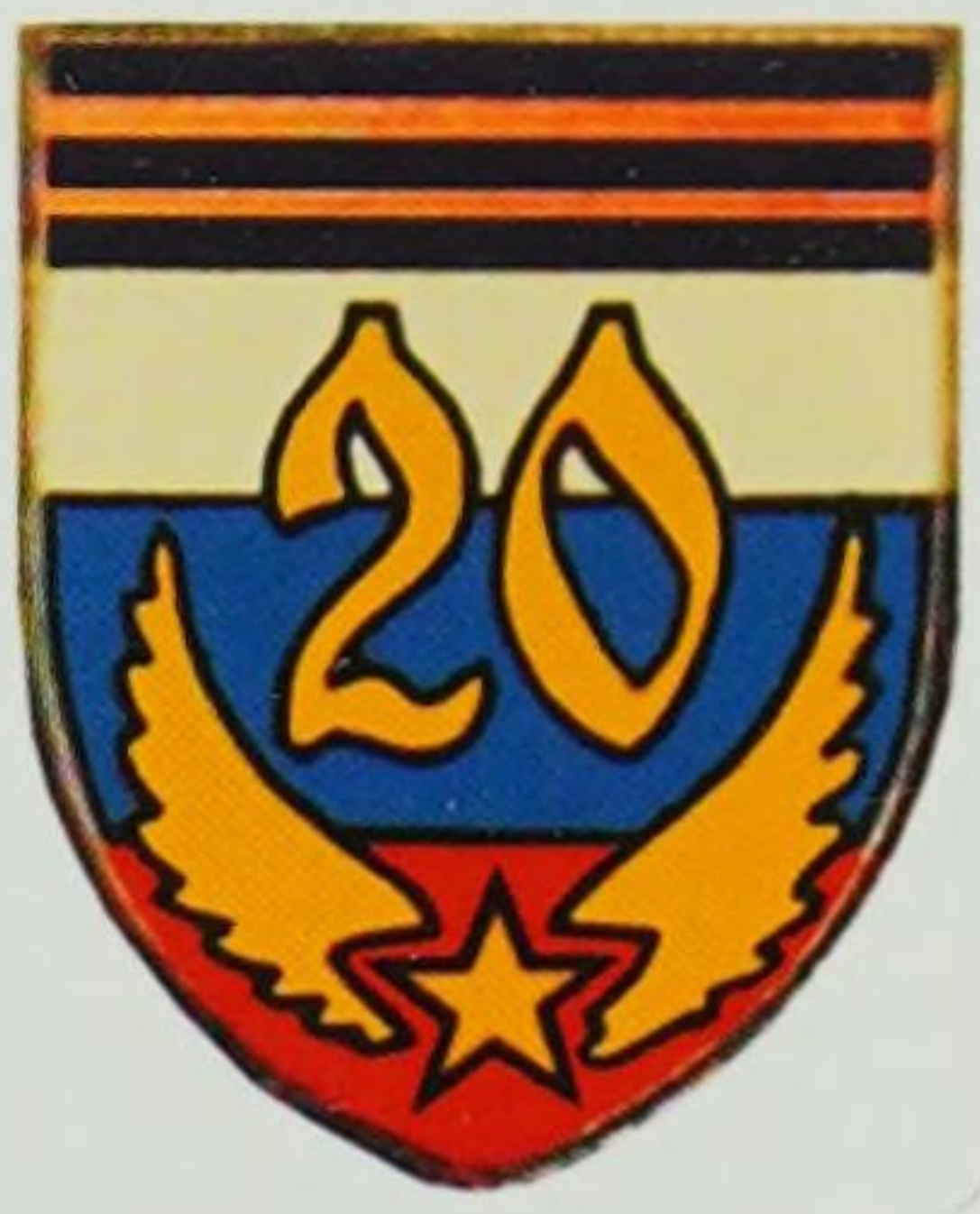
The fighter-bomber variants of the *Flogger* also saw service with the GSVG. The first of these was the MiG-23BN *Flogger-H* which made brief deployments to Großenhain, Lärz, Mahlwinkel, Parchim and Tutow, starting in 1973. Later, MiG-27D *Flogger-J* fighter-bombers were stationed at Altenburg, Finsterwalde, Großenhain and Lärz, while the more modern MiG-27K *Flogger-J2* served with the units at Brand and Finsterwalde. Each MiG-27 unit had a number of MiG-23UBs.

20th GvAPIB/Sqn 3 Su-17M4 '40 Yellow' in front of an HAS at Groß-Dölln AB. Note the work platform between the ladder and the wing.



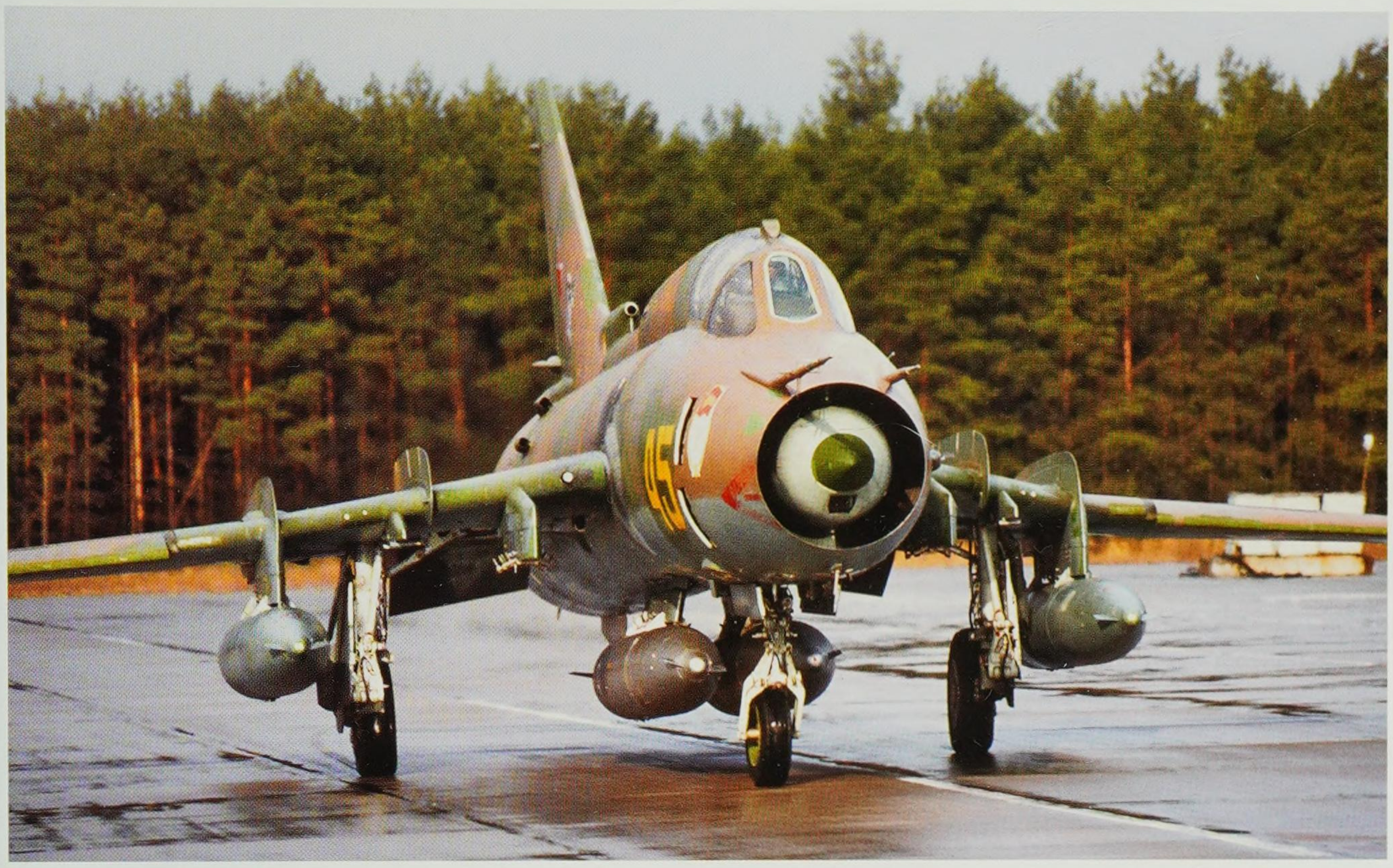


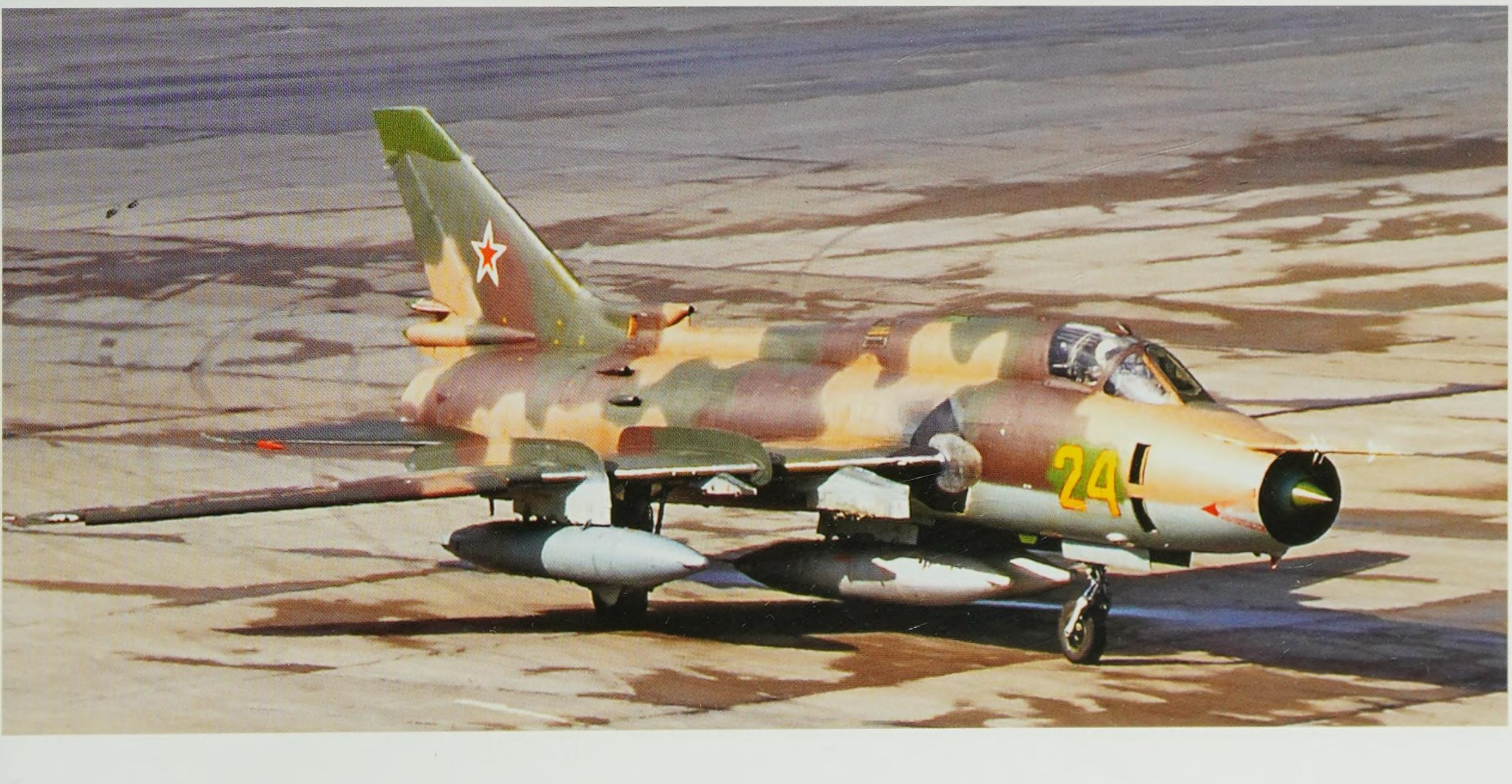
The first bombers operated by the GSOVG in the immediate post-war years were Petlyakov Pe-2 dive bombers. Later, the IL-28 *Beagle* tactical bomber served with the GSVG in the basic bomber, reconnaissance and target-towing roles (the latter versions are described later); a small number of IL-28U *Mascot* trainers were also present. The type was mainly stationed at Brand (668th FBAP, 35 aircraft since the 1950s; re-equipped with Yak-28 bombers in 1965), Brandis (only occasionally), Finow (207th FBAP, from 1956; converted to the Yak-28 in 1965), Finsterwalde (briefly, the early 1950s), Lärz (1950s), Neu-



An enamel badge made for the 20th GvAPIB personnel in the 1990s.

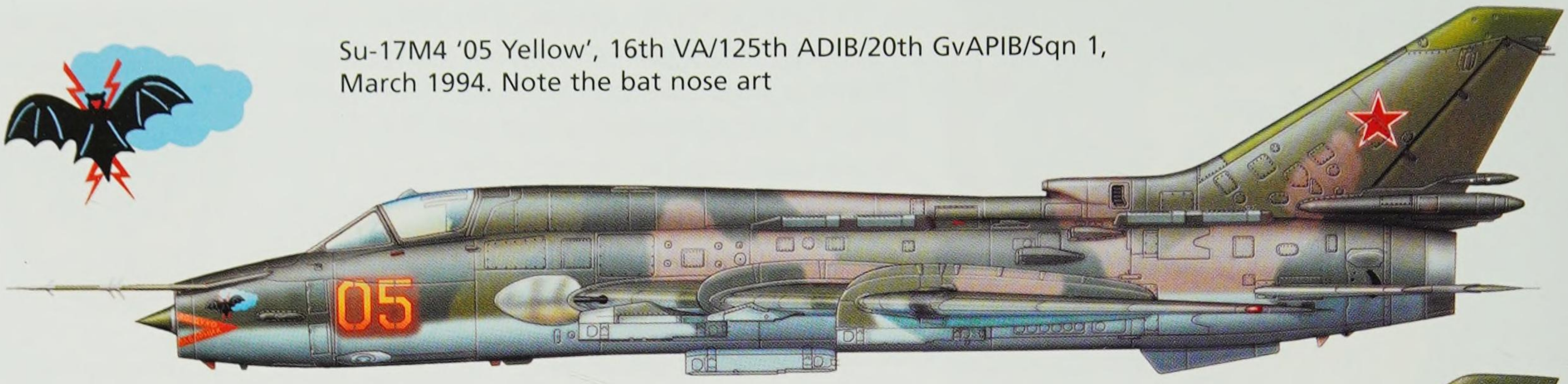
A different 20th GvAPIB/Sqn 3 badge featuring a more traditional eagle; 'GD' stands for Groß-Dölln AB. Note the wider border of the Russian star insignia.



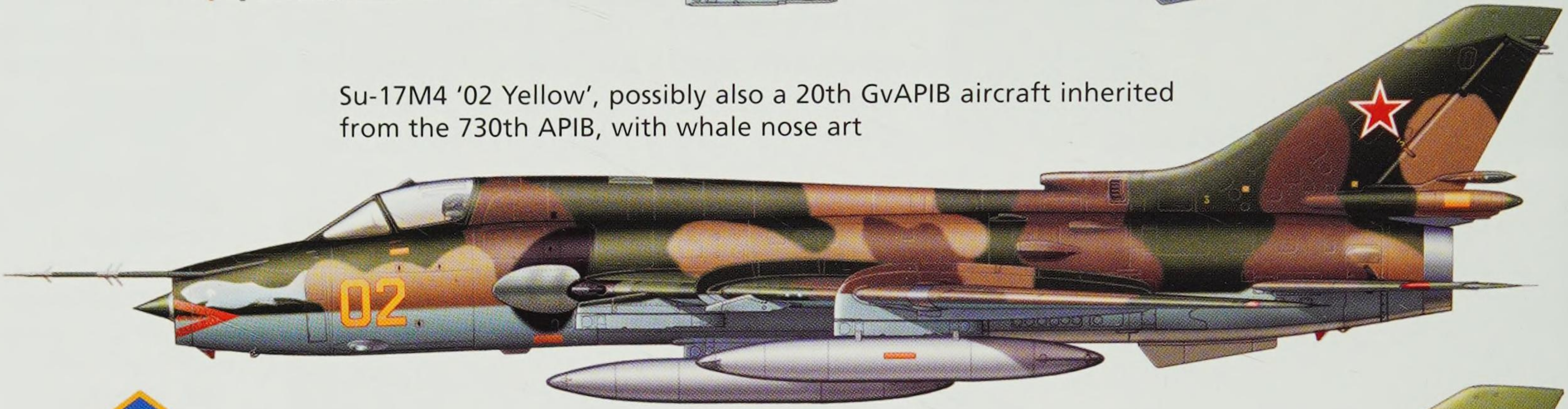


Su-17M4s '45 Yellow' and '24 Yellow' depart Groß-Dölln in March 1994, carrying four drop tanks each.

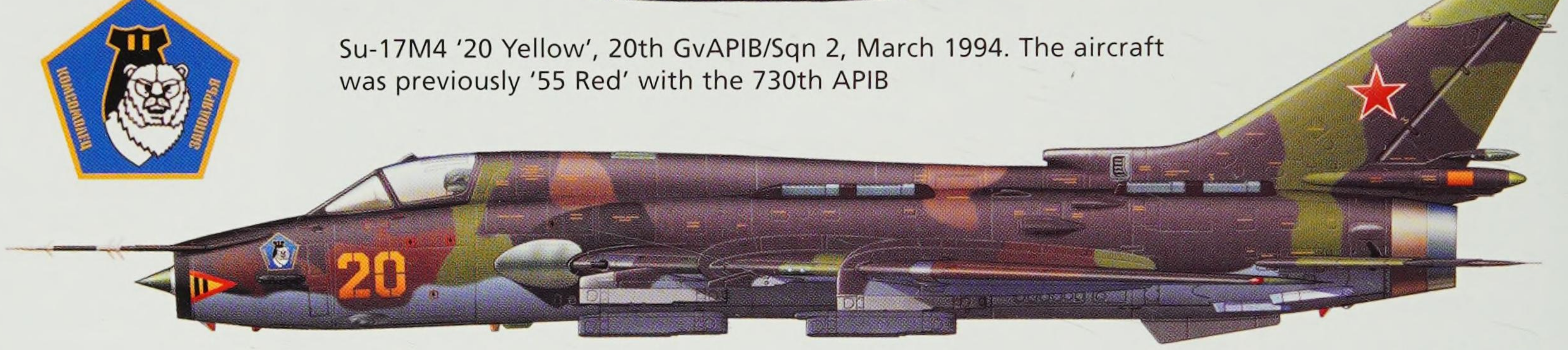
Su-17M4 '05 Yellow', 16th VA/125th ADIB/20th GvAPIB/Sqn 1, March 1994. Note the bat nose art



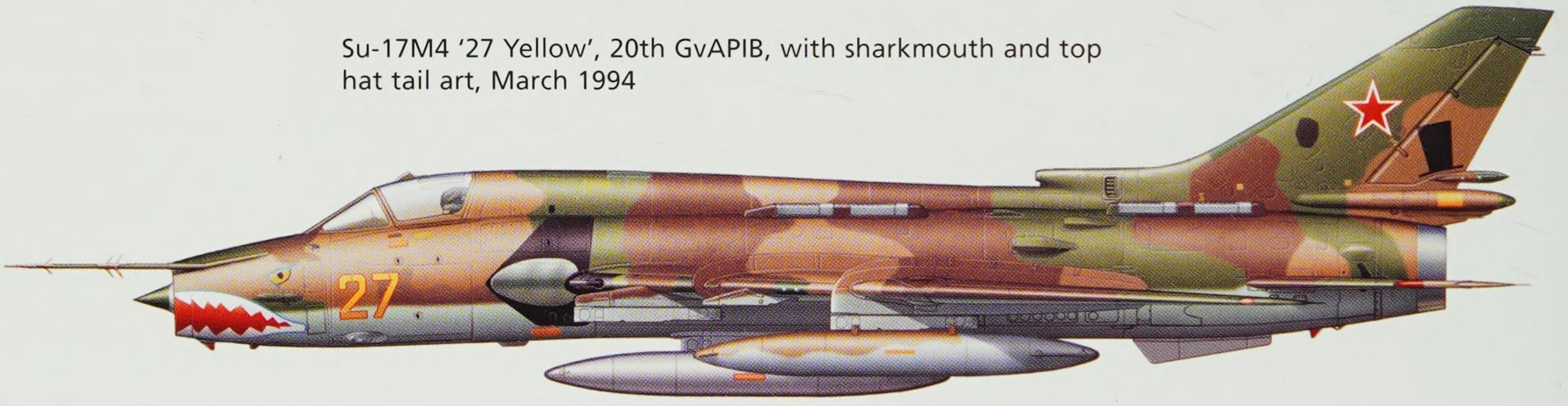
Su-17M4 '02 Yellow', possibly also a 20th GvAPIB aircraft inherited from the 730th APIB, with whale nose art



Su-17M4 '20 Yellow', 20th GvAPIB/Sqn 2, March 1994. The aircraft was previously '55 Red' with the 730th APIB



Su-17M4 '27 Yellow', 20th GvAPIB, with sharkmouth and top hat tail art, March 1994



A badge commemorating the 50th anniversary of the 20th GvAPIB (1939-1989).

Welzow (20 bombers first seen in 1953), Oranienburg (probably 221st FBAP, April-December 1951 and August 1954 – August 1956), and Werneuchen – that is, not counting the special mission versions. (FBAP = *fron*-*to**voy** bombardi**rov**ochnyy **avia**polk* – tactical bomber regiment)

An IL-28 from Oranienburg crashed near Teschendorf village 13 km (8 miles) north of the base in February 1956; another one was lost in August, just 2 km (1.24 miles) from the site of the previous crash. Shortly afterwards, on 26th August 1956, the regiment pulled out from Oranienburg. Military observers from the Allied nations and the local residents were invited to see the bombers' departure as a goodwill gesture and a small air fest was held.

The subsonic Il'yushin twinjets were superseded in the tactical bomber role by Yakovlev twinjets. Several versions of the Yak-28 supersonic tactical bomber saw service with the GSVG for a quarter of a century (1963-1989), including the Yak-28L *Brewer-B* with the DBS-2S Lotos radio command guidance (data link) system and the Yak-28I *Brewer-C* with the Initsiativa-2 360° ground mapping/bomb-aiming radar. The bomber versions and the unarmed Yak-28U *Maestro* trainer were based at Brand (668th FBAP), Finow (207th FBAP) and Werneuchen. Special mission versions of the *Brewer* were also operated and are described separately.

The Su-24 tactical bomber superseded the Yakovlev twin in the GSVG in July 1979 when the first *Fencer-Cs* were based at Groß-Dölln AB. Later, the Su-24M *Fencer-D* saw service with the bomber regiments at Brand and Großenhain until 1989. Additionally, in 1986-90 the 931st ORAP operated the specialised MiG-25BM *Foxbat-E* air defence suppression version. This was designed for destroying enemy air defence radars with Kh-58 missiles.

In the early days of the GSOVG and GSVG the Il'yushin IL-10 *Beast* attack aircraft was stationed in East Germany in large numbers. Later, when the type was retired and the Attack Aviation as a separate arm of the Soviet Air Force was abolished, specialised attack aircraft did not appear on German soil until the advent of the single-seat Su-25 *Frogfoot-A* and the two-seat Su-25UB *Frogfoot-B* in 1985. The GSVG's two units operating the Su-25 were the 357th OShAP (*ot**del'**nyy shtoormo**voy** avia**polk*** – independent attack regiment) at Brandis and the 368th OShAP at Tutow until 1993.

The first transport aircraft type operated by the GSVG was the Douglas C-47A/B Dakota (operated in 1945-46 by what was then the 226th TAP, ***trahns**portnyy avia**polk*** – airlift regiment) and its Soviet derivative, the Lisunov Li-2 *Cab*. Both the basic Li-2T transport and the Li-2P airliner version (in VIP configuration) were used, operating from Jüterbog-Altes Lager, Oranienburg, Berlin-Schönefeld airport, Sperenberg and Werneuchen. One of the Li-2s crashed near Bohnsdorf while on approach to Berlin-Schönefeld airport in 1956. Much later, in 1979, a Soviet civil airliner (Tu-134A CCCP-65795) would crash near the same spot.

Later, transport duties were performed by IL-12D *Coach* transport/troopship aircraft operating from Brand AB, Oranienburg AB, Werneuchen AB and Berlin-Schönefeld airport from 1953 until the mid-1960s. The IL-12Ds were equipped for glider towing, working with Yak-14 *Crow* cargo gliders, several of which were used for a brief period in the early 1950s. The Li-2 and IL-12 gave place to the IL-14 *Crate* which saw service with the 16th VA all the way until 1989. Most of them were VIP-configured IL-14Ps and IL-14Ms.

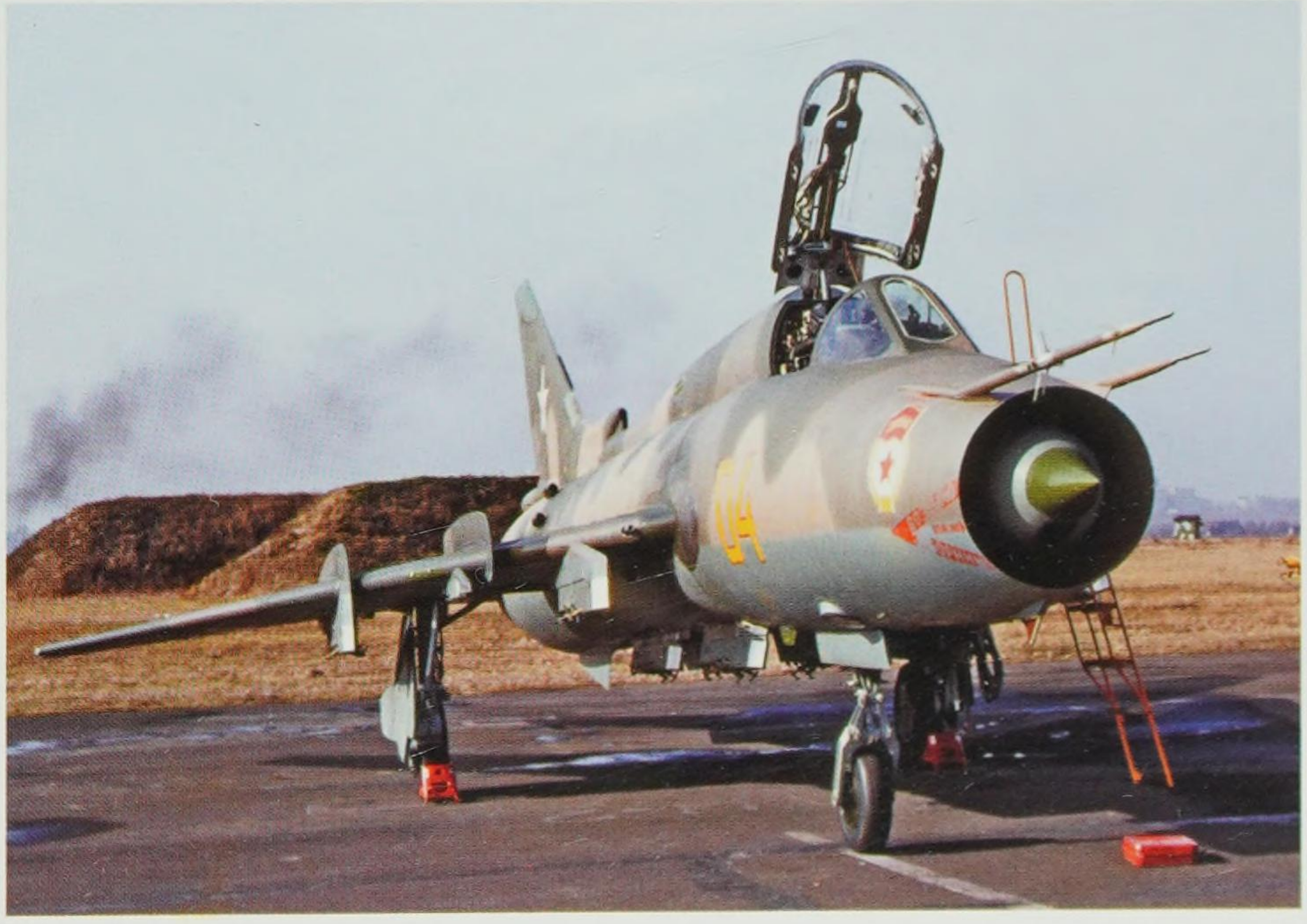
Up to 40 An-8 *Camp* twin-turboprop transports served with the GSVG in 1962-73, operating from Oranienburg, Sperenberg and Werneuchen. Among other things, the machines from Oranienburg took part in the Warsaw Pact invasion of Czechoslovakia in 1968. More often, however, the An-8s were used in various exercises involving paradropping of troops.

АВИАБАЗА
ГРОСС-ДЁЛЬН
FLUGPLATZ
Groß-Dölln

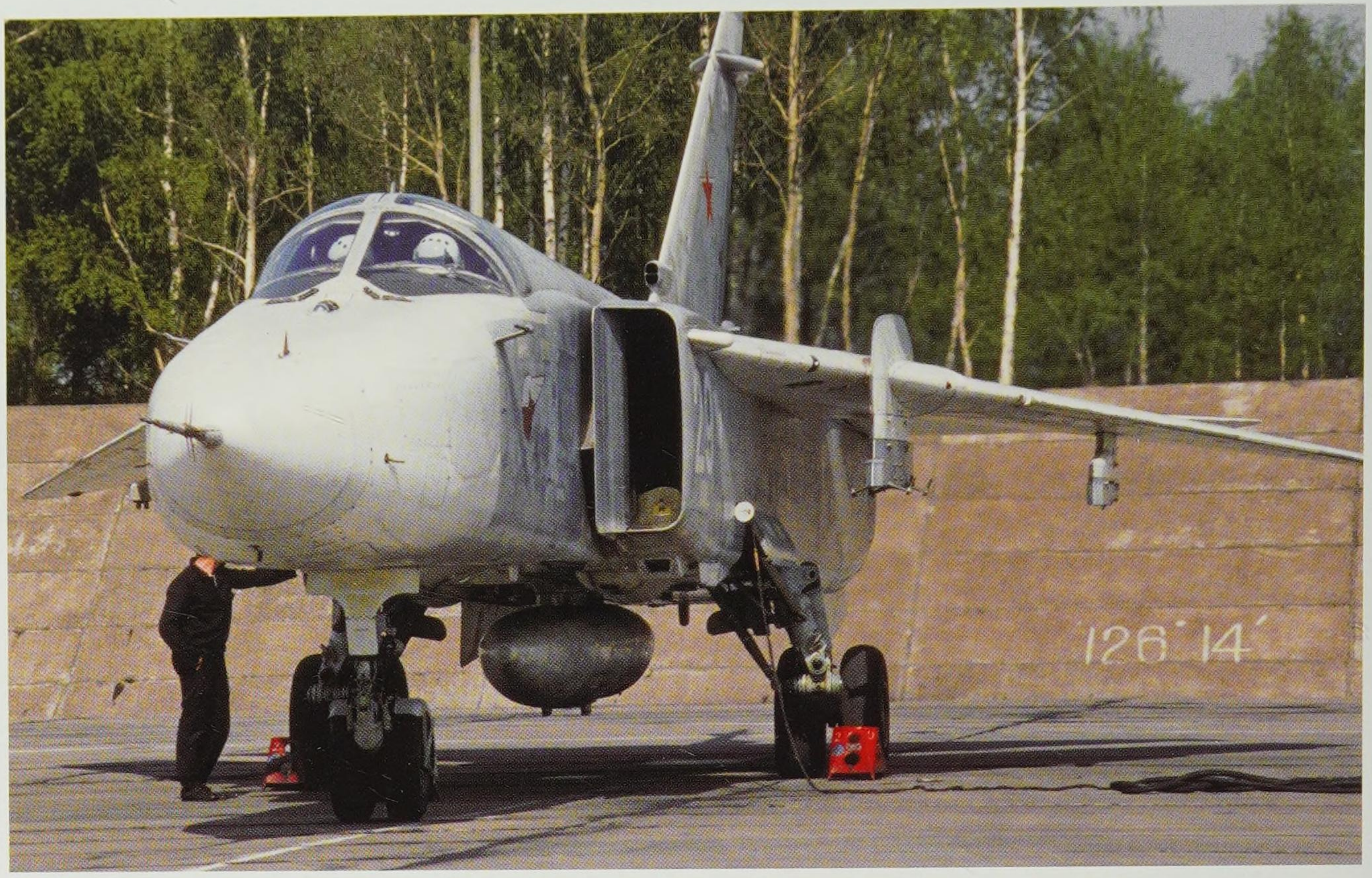
Russian- and German-language versions of the shoulder patch worn by GSVG personnel serving at Groß-Dölln AB. The German version was a souvenir, of course.

From 1963 onwards the 226th OSAP operated a succession of constantly shifting An-12 *Cub* transports (some 20 were noted at various times). Most of them wore military markings, although a few were quasi-civil with Aeroflot Soviet Airlines titles.

Executive aircraft operated by the 226th OSAP included two Ulan-Ude-built An-24B 'Salon' (*Coke*) airliners (in 1965-1994) and two An-26S *Curl* transports which could carry a car or a jeep in addition to the commander and his retinue. Other An-26s were ordinary transports (four) or special-mission aircraft, including a single An-26KPA flight checker. The *Curl* saw service in the GSVG/ZGV in 1972-94. A single Tu-134AK *Crusty* VIP jet was assigned to the 226th OSAP in 1981; sometime after 1986 this aircraft was retrofitted with a *Bal**ka**ny* (Balkans) secure HF communications suite to become a Tu-134 'Balkany'.



'04 Yellow', a 20th GvAPIB Su-17M4, shows the Guards badge applied on the starboard side.



'29 White', a Su-24MR ELINT aircraft from the 11th ORAP, with a ventral equipment pod.

Below: Sister ship '05 White' from the same unit. The wings are fully swept back to save apron space. Note the ferry tanks with ground supports still attached.

Opposite page:

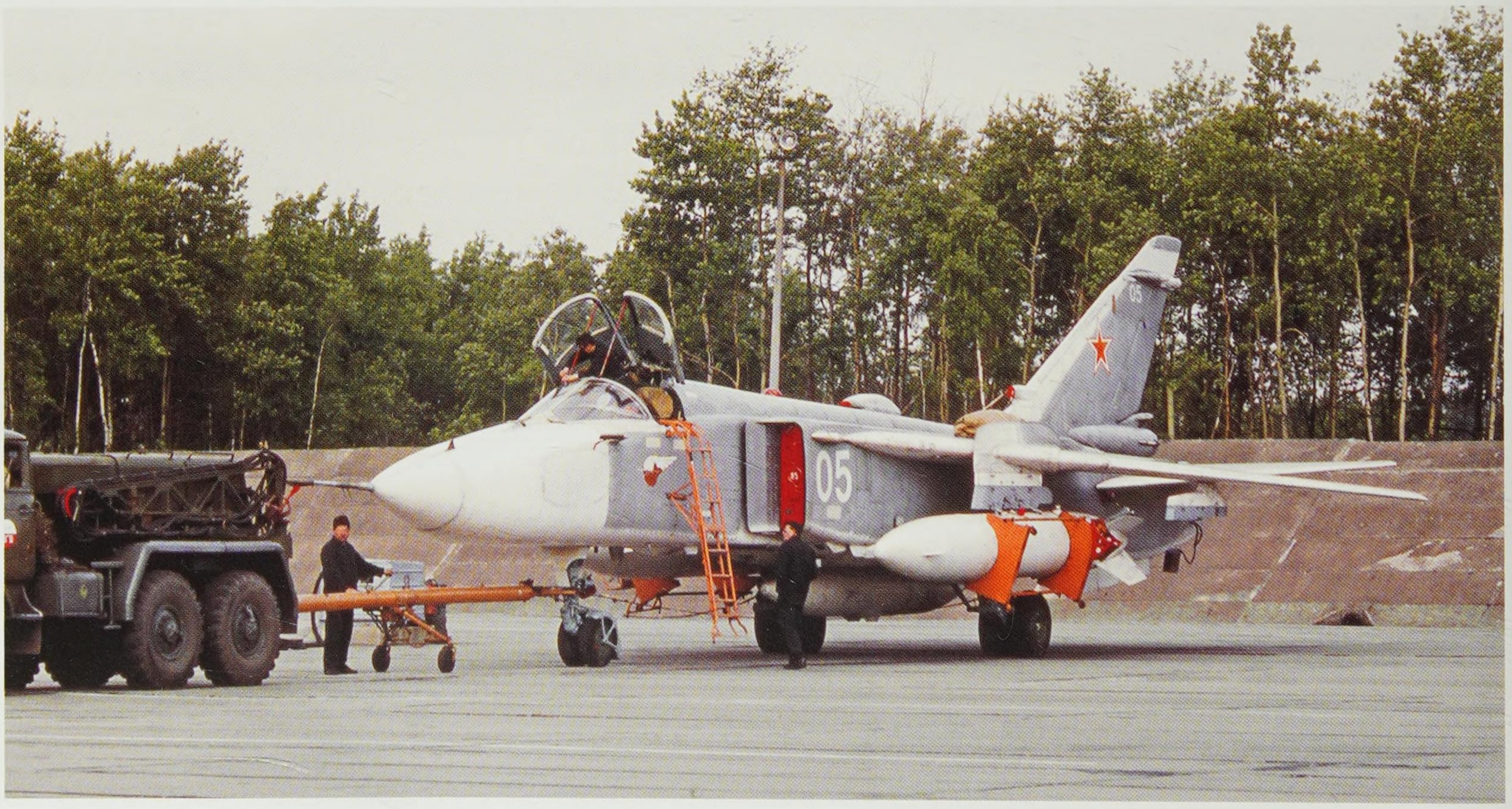
The 11th ORAP flight line at Neu-Welzow.

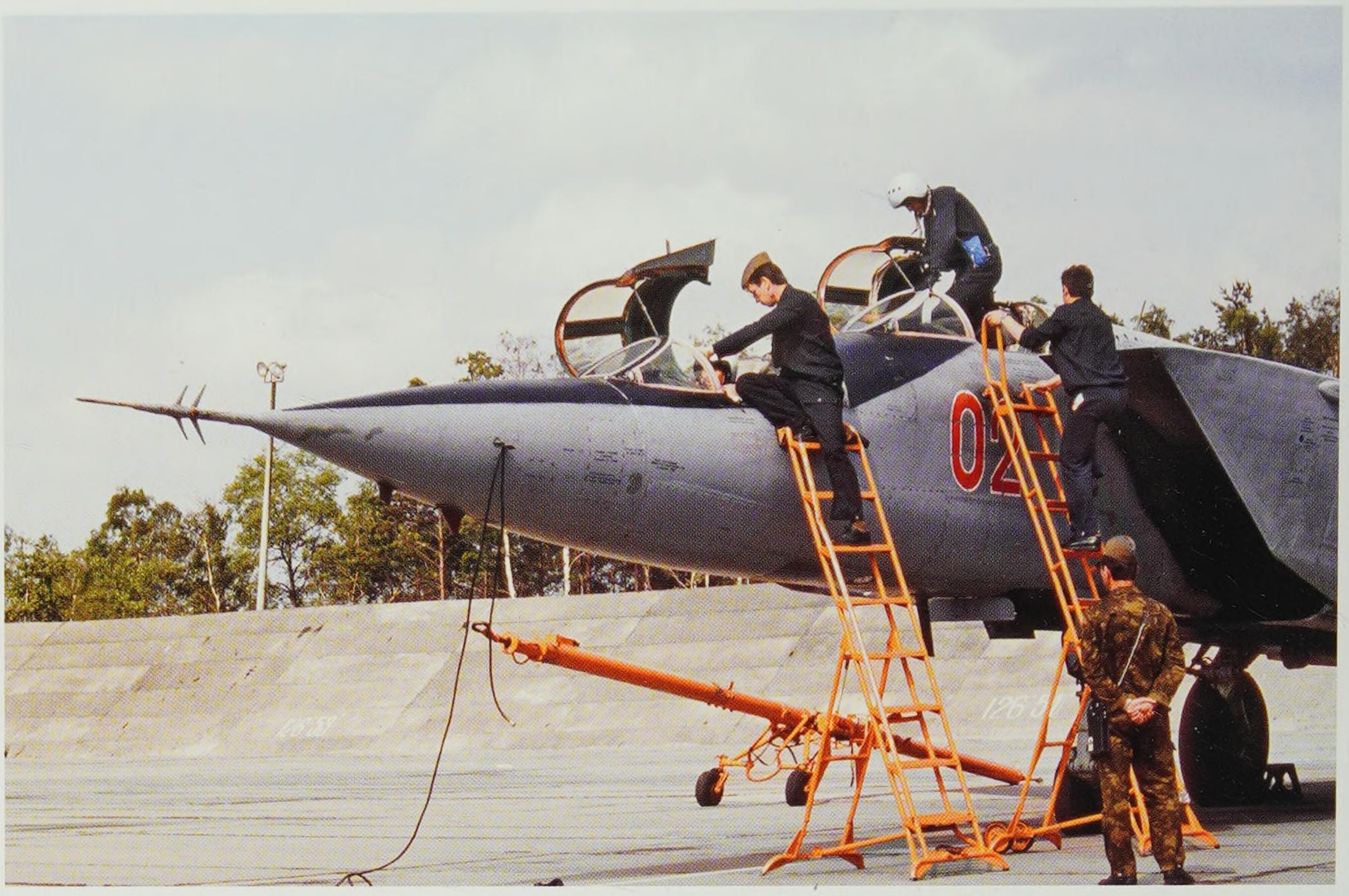
Su-24MR '10 White' departs Neu-Welzow. The wings are at minimum sweep.

116th GvBAP Su-24M bombers on the flight line at Brand AB.

In the early 1950s the divisions' headquarters used a few Polikarpov Po-2 *Mule* trainer biplanes and Yak-6 twin-engined light transports as liaison aircraft; in 1958-69 this role was taken over by Yak-12A *Creek* single-engined light aircraft, two of which were attached to each division. Liaison duties in the GSVG were also performed by a number of An-14A *Clod* twin-engined light utility aircraft operated by the division command flights at Großenhain and Wittstock. Ironically, though the type was meant as a replacement for the An-2 *Colt* utility biplane, it was the latter type that succeeded the An-14 in this role in the early 1980s!

Actually the ubiquitous and versatile An-2 saw service in the GSVG from the late 1950s; 12-seat An-2TP transport/passenger aircraft and VIP-configured examples were used. Most of the An-2s were Polish-built examples manufactured by PZL Mielec. From 1975 onwards the *Colt* was gradually replaced by the Mil' Mi-8 *Hip* helicopter, though a few served on until 1992.



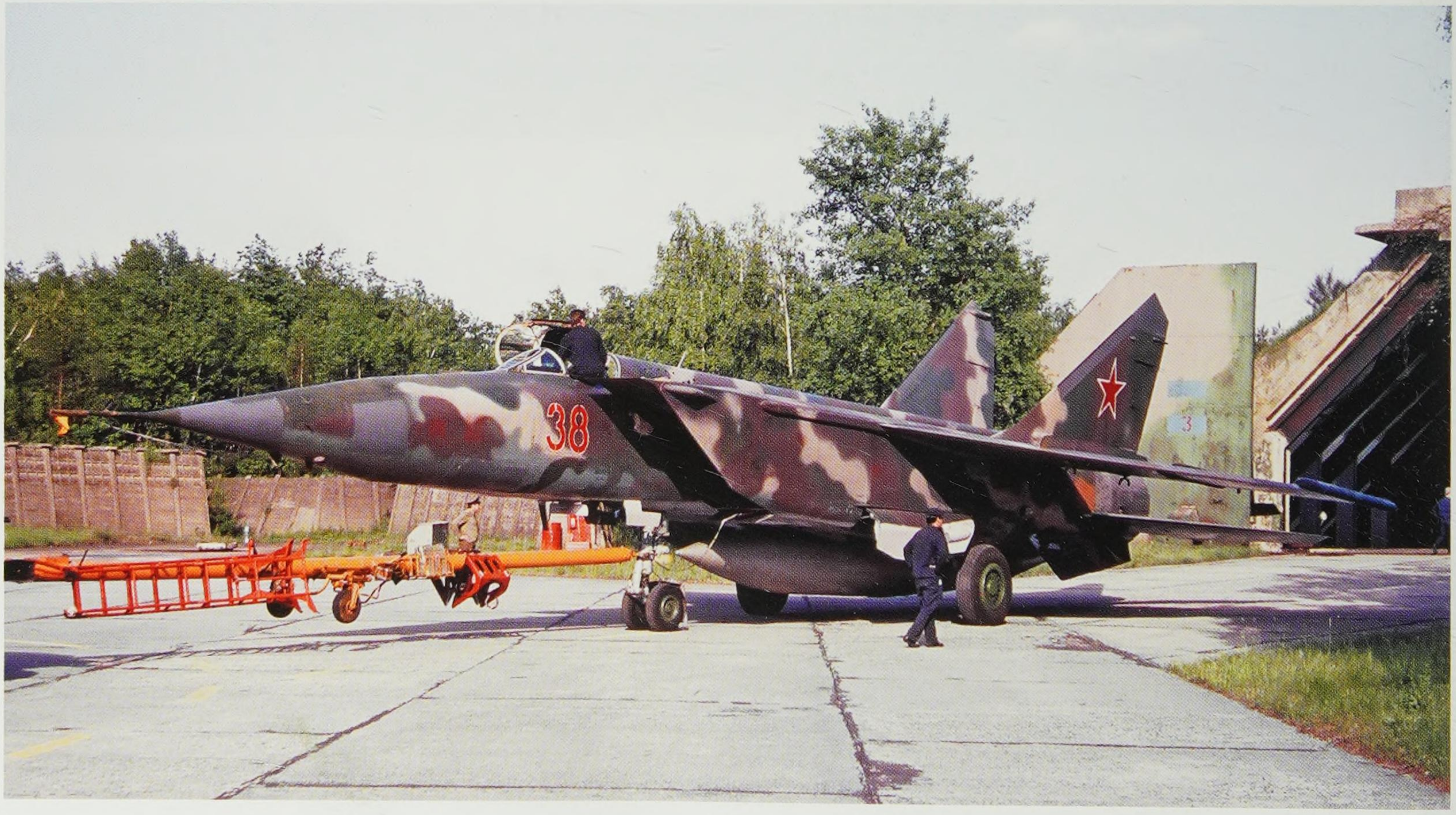


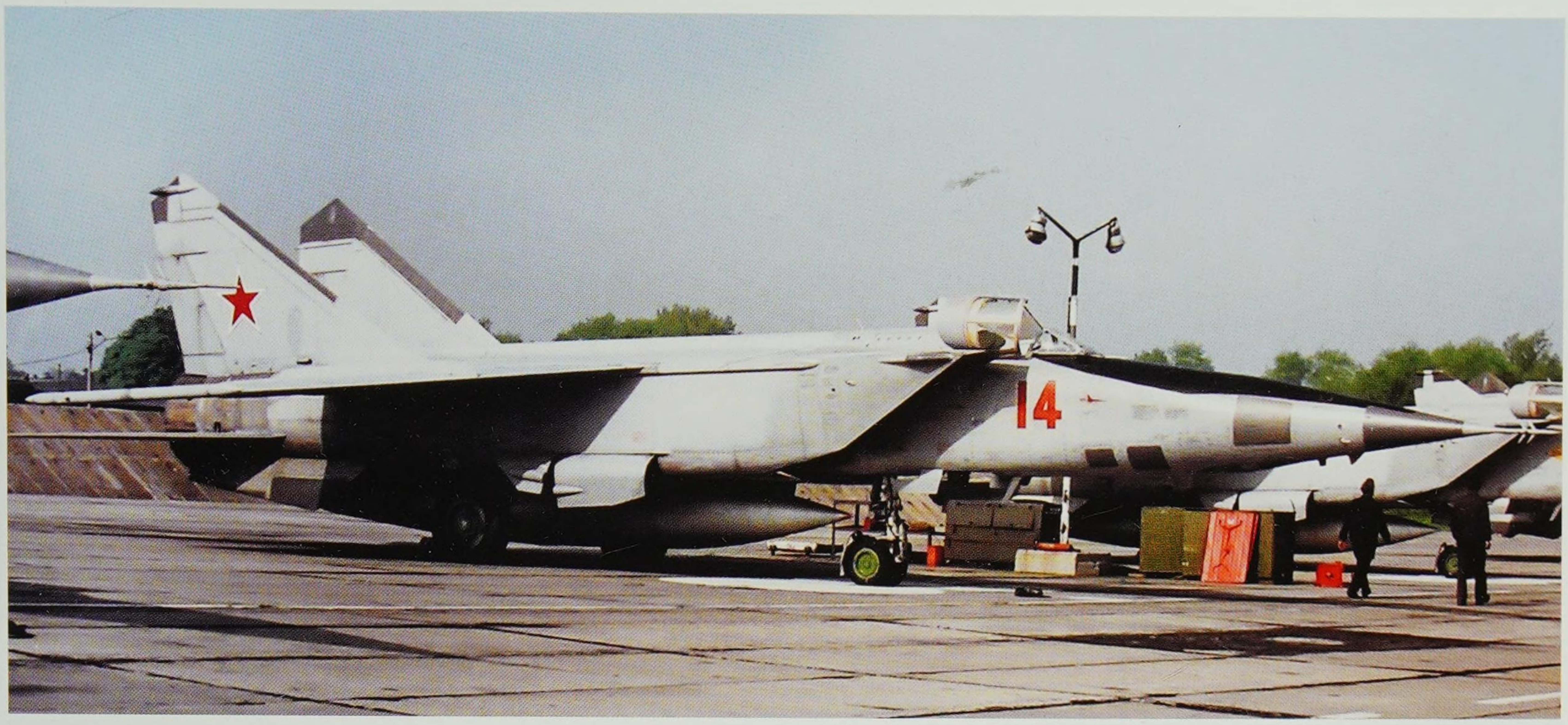
The crew climb aboard MiG-25RU '02 Red', a 931st GvORAP aircraft, at Werneuchen AB.

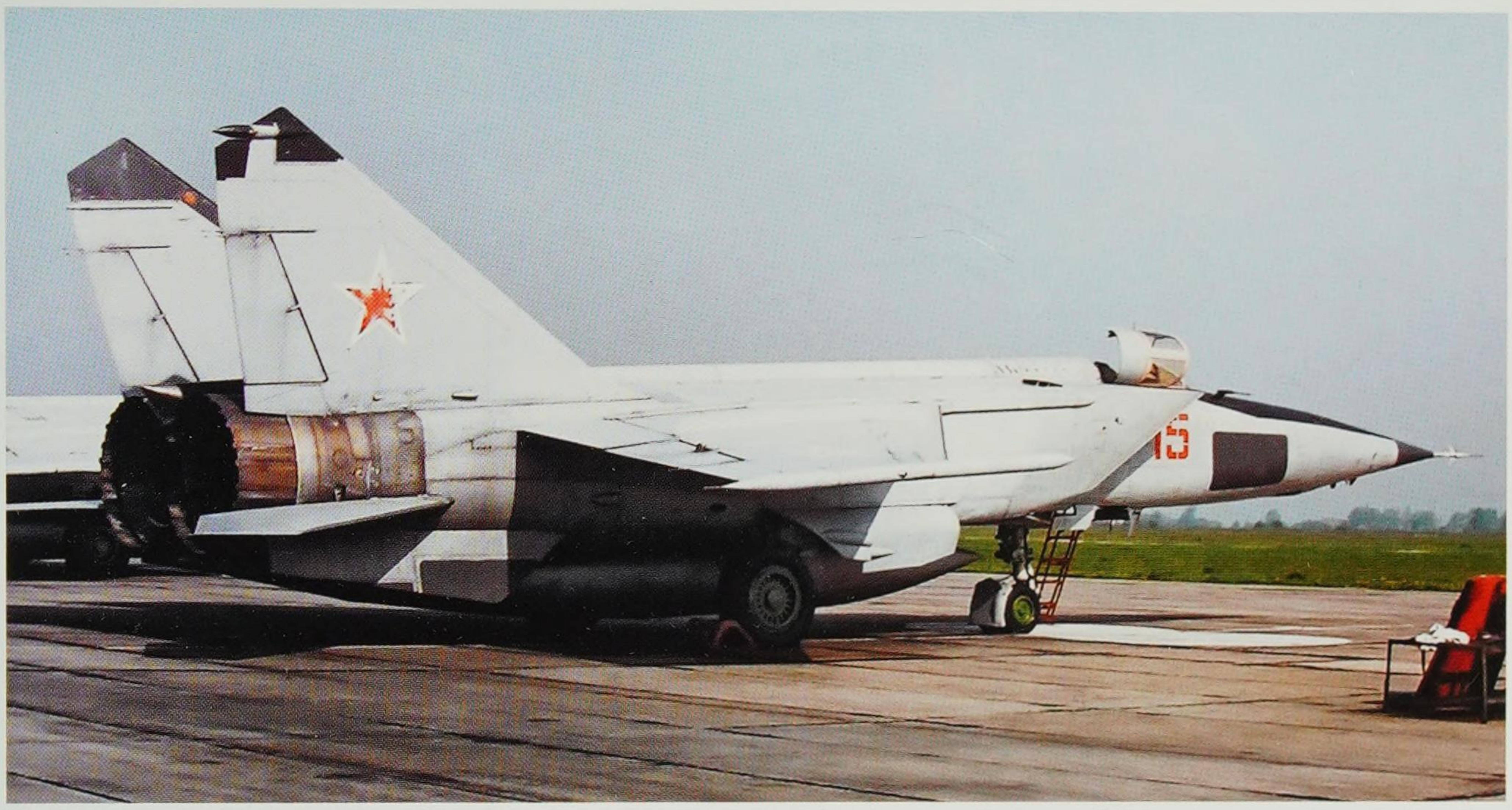
In the early days of the GSVG the Petlyakov Pe-2R (*raz***ved***chik*) reconnaissance version found use in Germany. It was later replaced by reconnaissance versions of the *Beagle* – the IL-28R photo reconnaissance (PHOTINT) aircraft and the IL-28RTR ELINT aircraft (***rah****diotekh****nich****eskiy* razvedchik). The reconnaissance *Beagles* operated from Allstedt (1968-70) and Jüterbog-Altes Lager (in the early 1950s).

Reconnaissance duties were also fulfilled by fighters. MiG-15R*bis* fighters operated from Altenburg; reconnaissance-configured MiG-17Fs saw service with the 294th ORAP (*ot****del'****nyy raz****ved****yvatel'nyy* ***a****via****polk*** – independent reconnaissance air regiment) at Allstedt and the 931st GvORAP at Zerbst. Additionally, a pair of Yak-25RV *Mandrake* high-altitude reconnaissance aircraft (*raz****ved****chik vy****sot****nyy*) – the single-seat, straight-wing

A camouflaged MiG-25RBF of the same unit outside its hardened aircraft shelter.



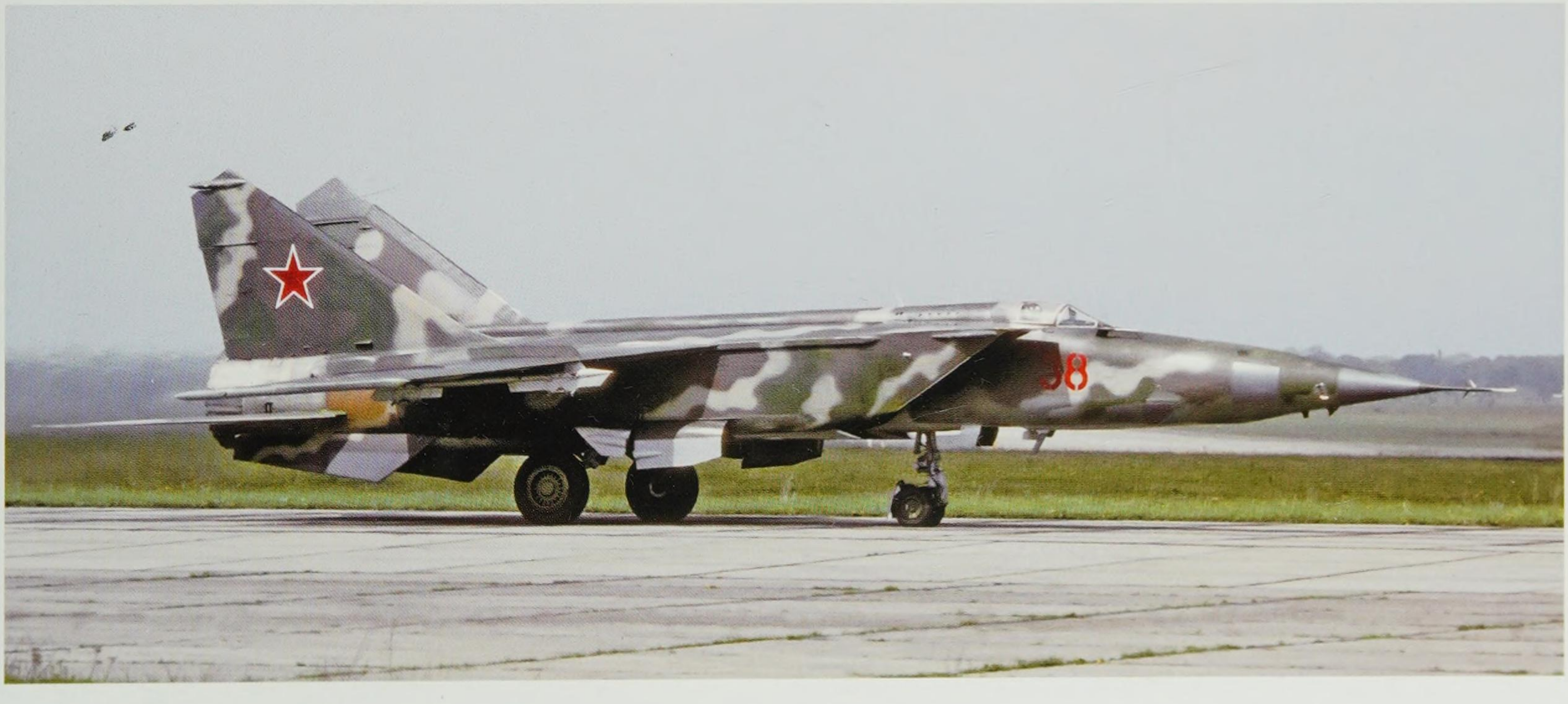




'14 Red', another MiG-25RBF, in standard grey finish. It saw service with the 164th GvORAP at Brzeg, Poland.

MiG-25RBS '15 Red', also a 164th GvORAP aircraft.

Another view of the 931st GvORAP MiG-25RBF shown opposite.



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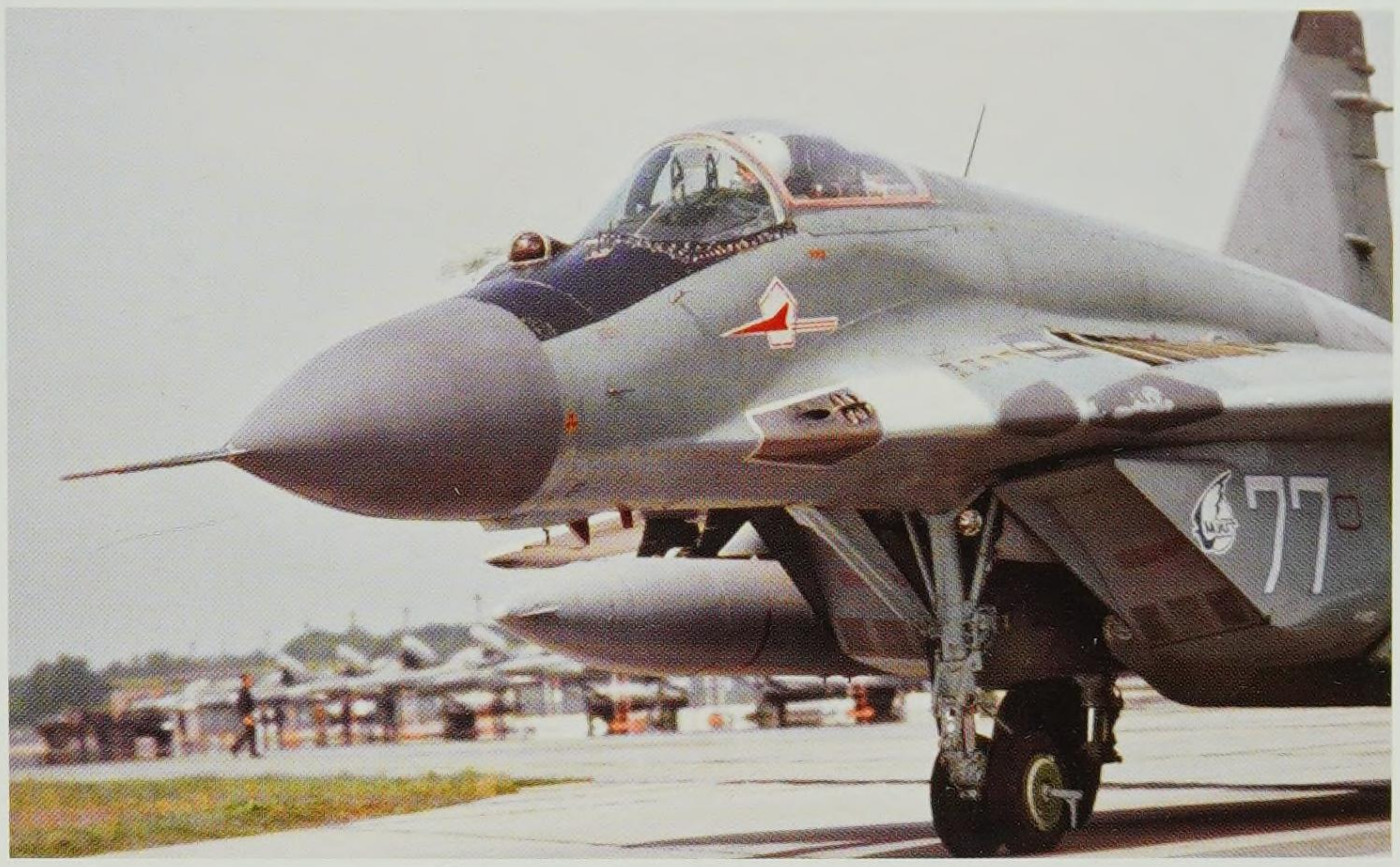
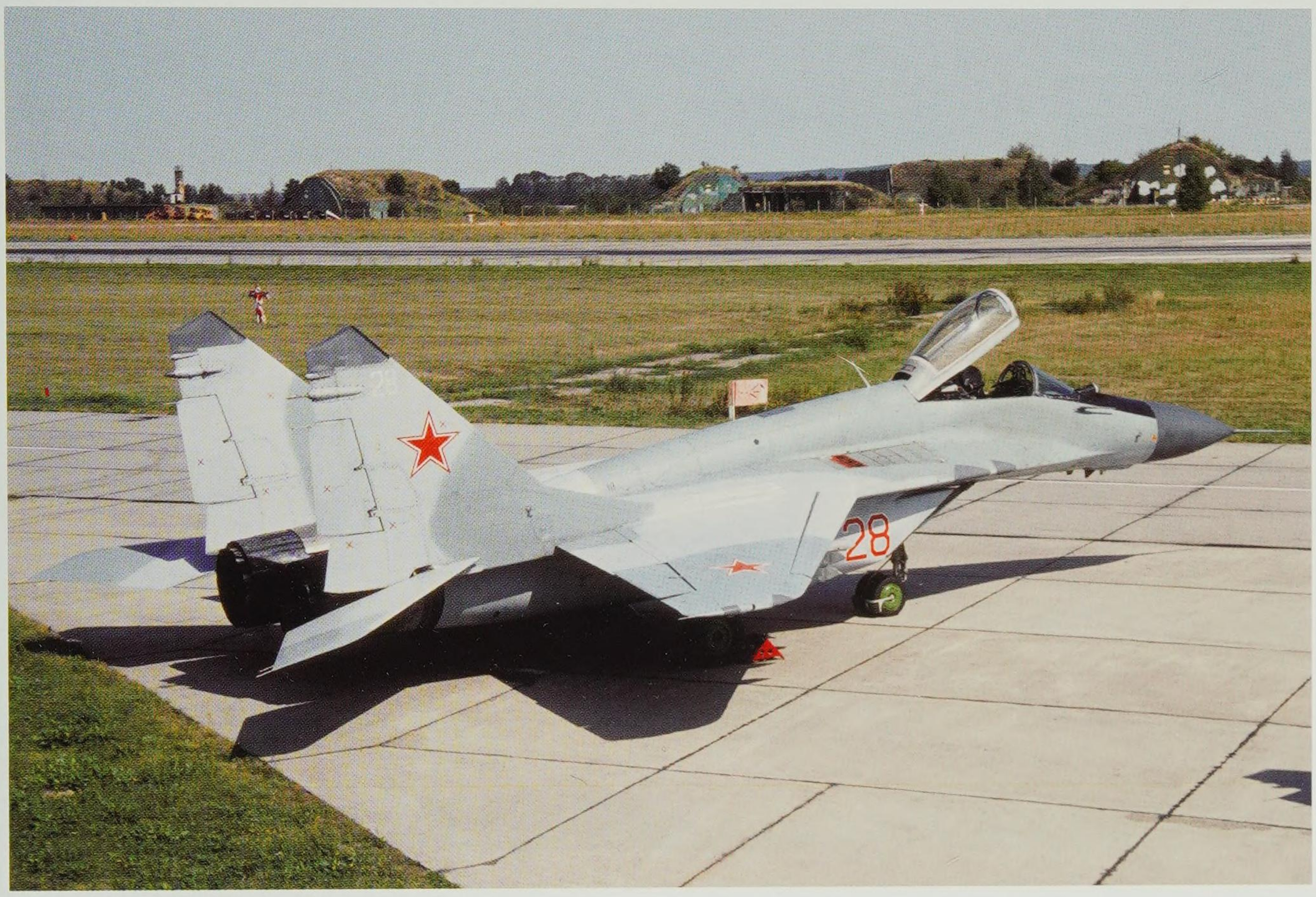
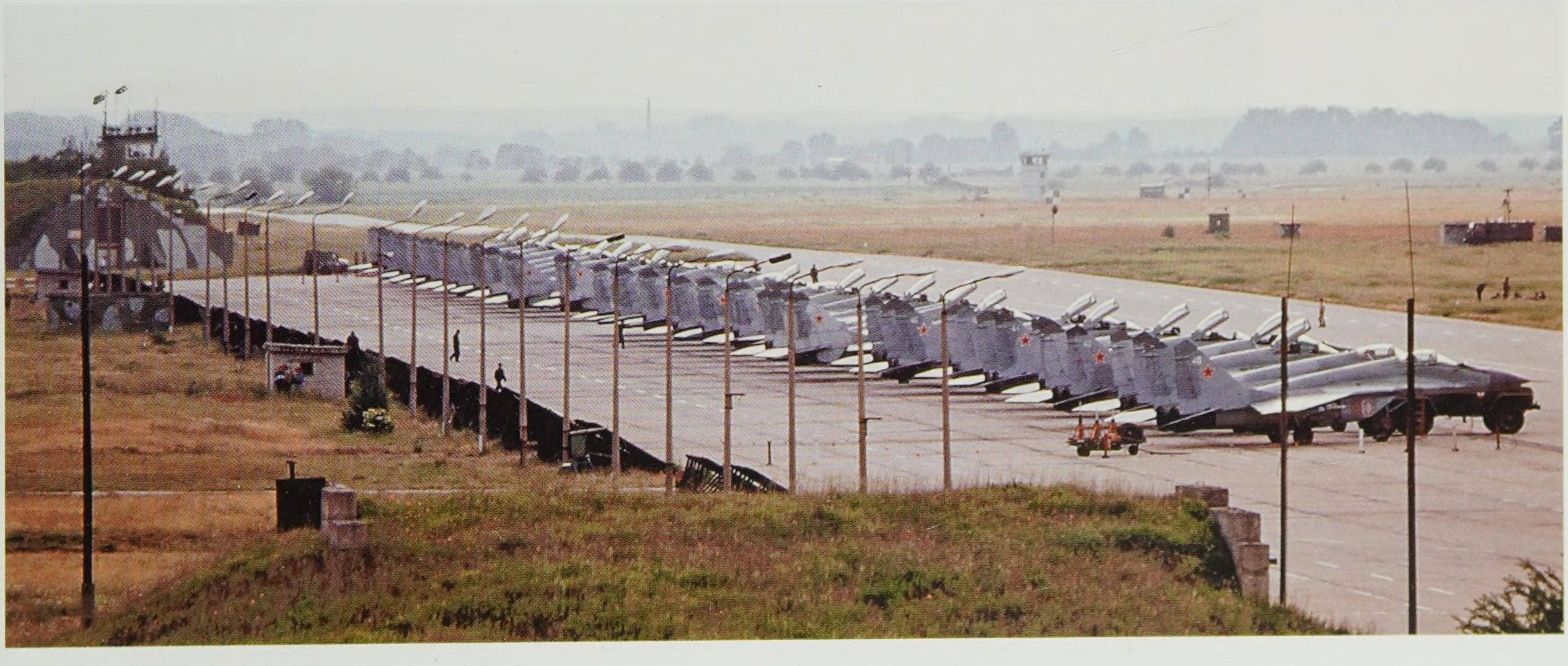
66

derivative of the *Flashlight-A* interceptor – arrived at Zerbst in 1966, operating from there until the introduction of the MiG-25RB and other versions.

The Yak-27R *Mangrove* tactical PHOTINT aircraft was stationed in East Germany in 1966-71, seeing service with the 11th ORAP at Neu-Welzow and the 931st GvORAP at Stendal which later moved to Werneuchen. The Yak-27R was occasionally deployed to other German bases. Its successors were the MiG-21R *Fishbed-H*, which was operated by the 294th ORAP at Altenburg, and the Yak-28R *Brewer-D* which saw service with the 11th ORAP and 931st GvORAP. One 11th







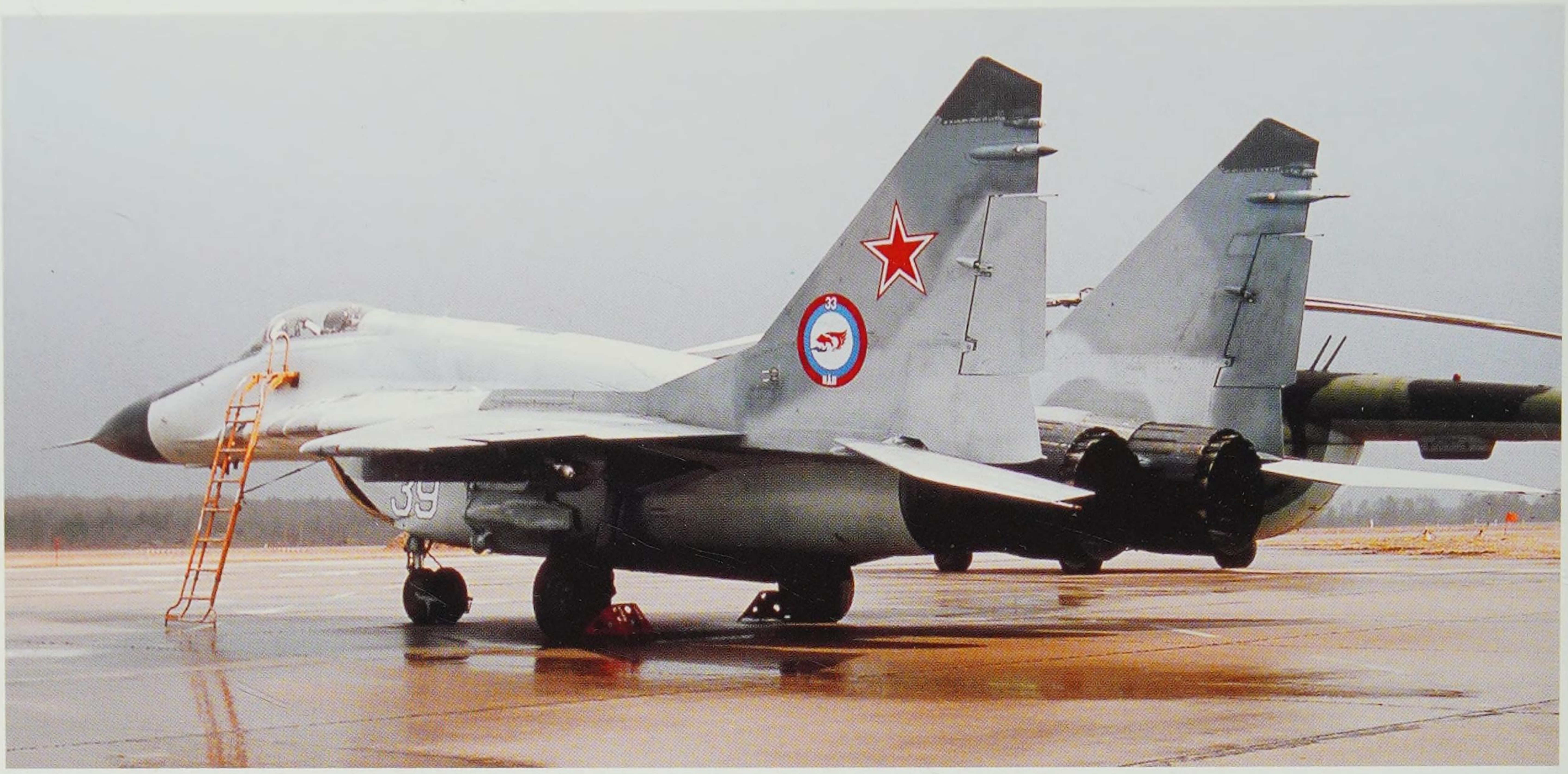
'77 White', a 787th IAP MiG-29, at Finow AB.

31st GvIAP MiG-29 '28 Red' basks in the sun at Falkenberg AB.

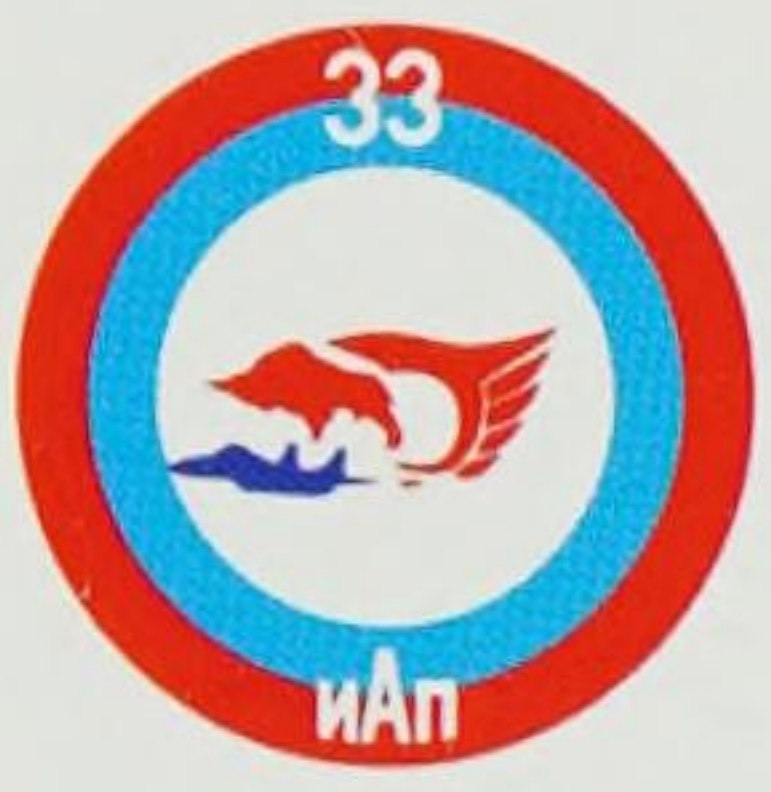
Red-coded 35th IAP *Fulcrum-Cs* at Zerbst AB.

Opposite page: Two views of the flight line at Finow AB.

This shot shows MiG-29s from two different units on the flight line.



Some 33rd IAP MiG-29s, like *Fulcrum-C* '39 White', carried the unit's large round badge on the tails.



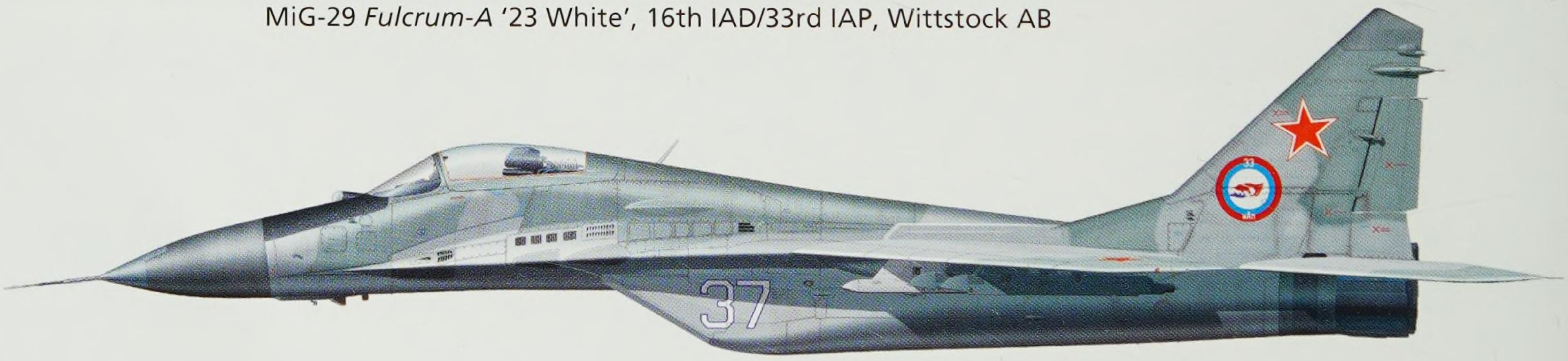
ORAP Yak-28R crashed near Neu-Welzow after an engine failure, killing pilot Yanov and navigator Kapoostin; luckily the crew managed to steer the stricken Yak away from a residential area, avoiding casualties on the ground. This even became the subject of a popular song titled *Huge Sky*, a sort of anthem to all pilots who died in harness.

From 1974 to 1992 the 931st GvORAP operated one of the 16th Air Army's main reconnaissance assets, the MiG-25RB. Various versions were used – the MiG-25RB, MiG-25RBV, MiG-25RBT and MiG-25RBK equipped with signals intelligence systems, the MiG-25RBS and MiG-25RBSh with side-looking radars, and the MiG-25RU trainer.

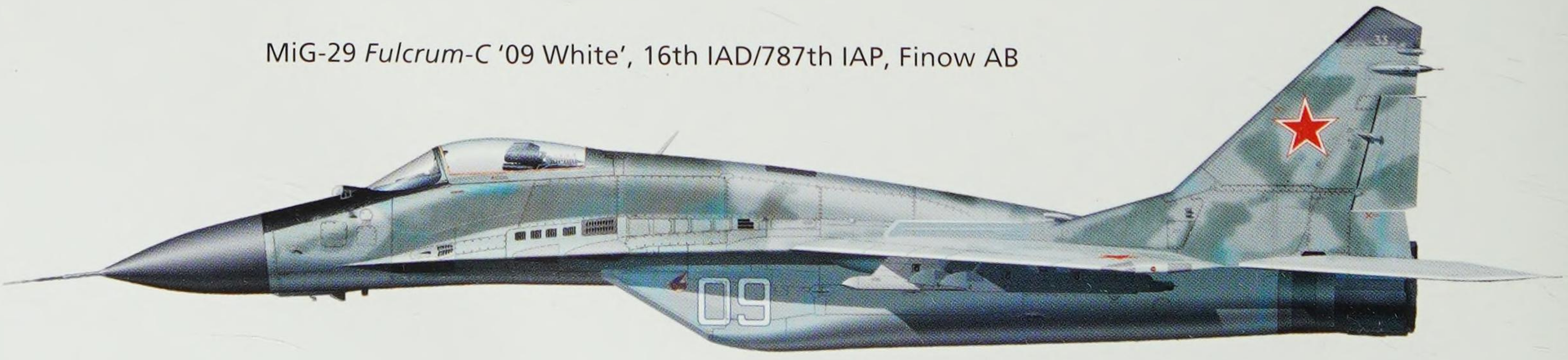
In 1986 the 294th ORAP at Allstedt re-equipped with the Su-17M3R reconnaissance aircraft and a few Su-17UMs. The *Fitter-H/Es* were in service here until 1991, returning to Russia via Templin AB on 21st May 1991. Another important reconnaissance type in the GSVG was the Su-24MR *Fencer-E*, which replaced the Yak-28R in 1986, operating from Neu-Welzow until 1993.

There was at least one IL-14T modified for electronic eavesdropping along the so-called 'internal German border' between East and

MiG-29 *Fulcrum-A* '23 White', 16th IAD/33rd IAP, Wittstock AB



MiG-29 *Fulcrum-C* '09 White', 16th IAD/787th IAP, Finow AB

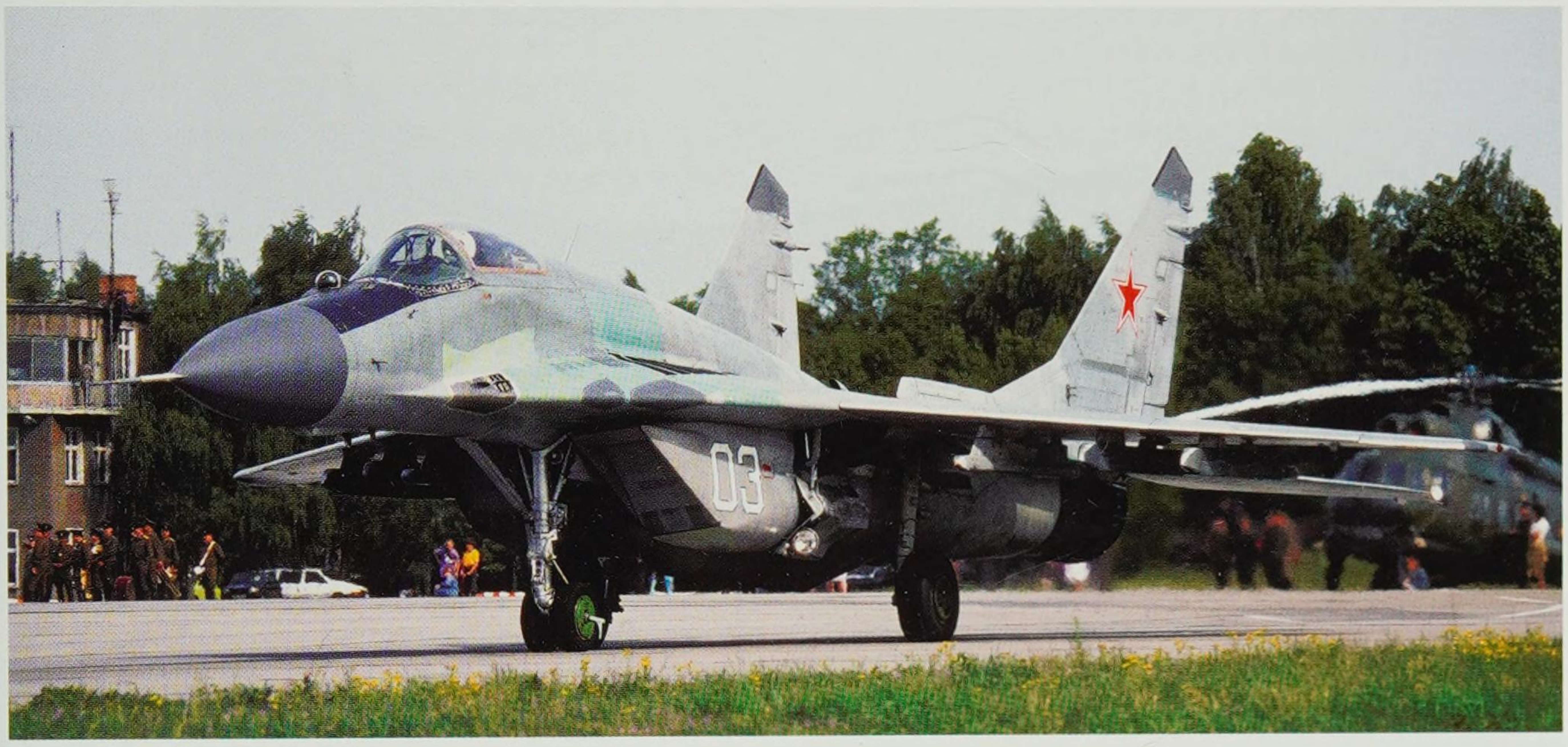


West Germany. It was later superseded by the An-26RTR identifiable by the large additional blade aerials on the fuselage; two such aircraft saw service with the 226th OSAP. Another electronic intelligence asset was the IL-20M *Coot-A* derivative of the IL-18D long-haul airliner; two such aircraft were based at Sperenberg AB from the mid-1970s, operating with the 390th OAO (*ot**del'**nyy **a**viaot**ryad*** – Independent Air Detachment) and briefly deploying to Oranienburg.

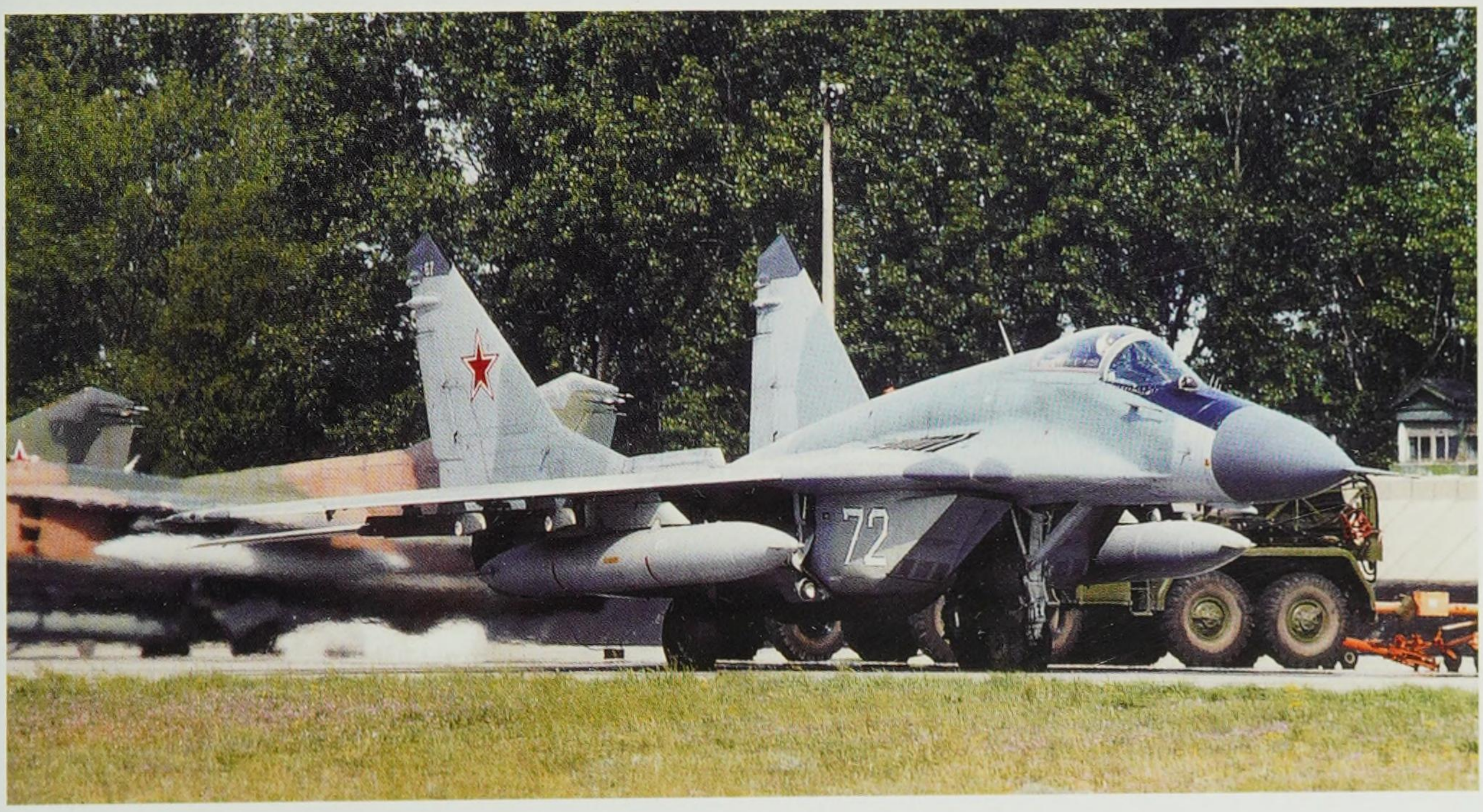
Radiation reconnaissance (RINT) was performed by at least one An-12RR (*radiatsi**on**nyy raz**ved**chik* – RINT aircraft) stationed at Sperenberg and two Yak-28RRs operating from Werneuchen.

A single An-10 *Cat* airliner converted to an airborne command post saw service with the 226th OSAP. After being retired the aircraft ended its days as a target on the aerial gunnery range at Wittstock. Its successor was the IL-22M 'Bizon' (*Coot-B*) airborne command post, another derivative of the IL-18D, a single example of which (CCCP-75913) was seconded to the 390th OAO and operated from Sperenberg.

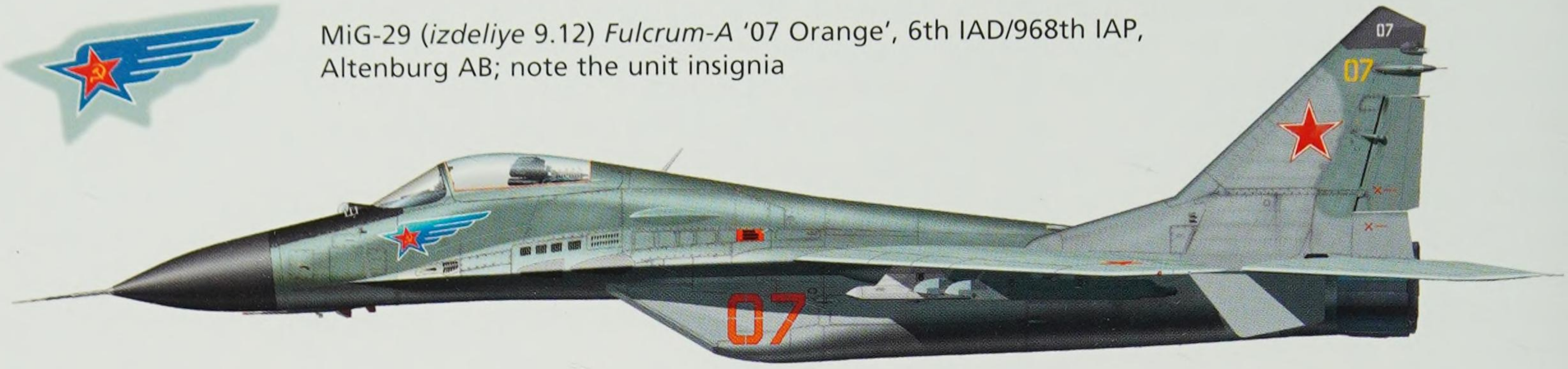
The 16th Air Army also operated ECM aircraft. These included at least one An-12PP (*posta**nov**shchik po**mekh*** – ECM aircraft) and the Yak-28PP *Brewer-E* (the latter served with



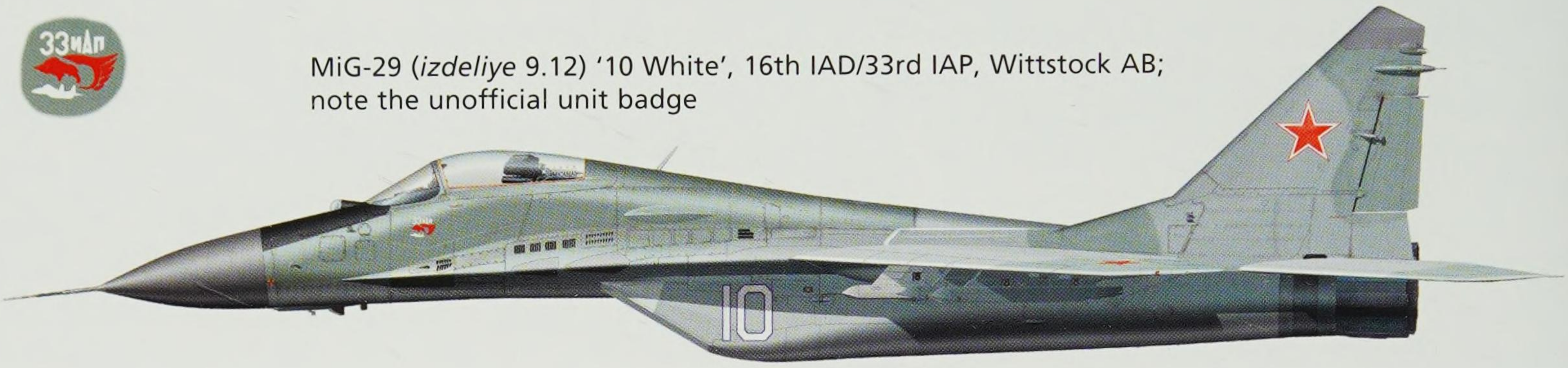
787th IAP MiG-29 *Fulcrum-C* '03 White' taxies out at Finow AB, Germany, past a row of resident sister ships and MiG-23UBs and a visiting Mi-8PS VIP transport helicopter. Note the patchwork appearance – the scuffed paintwork was touched up with whatever paint was available.



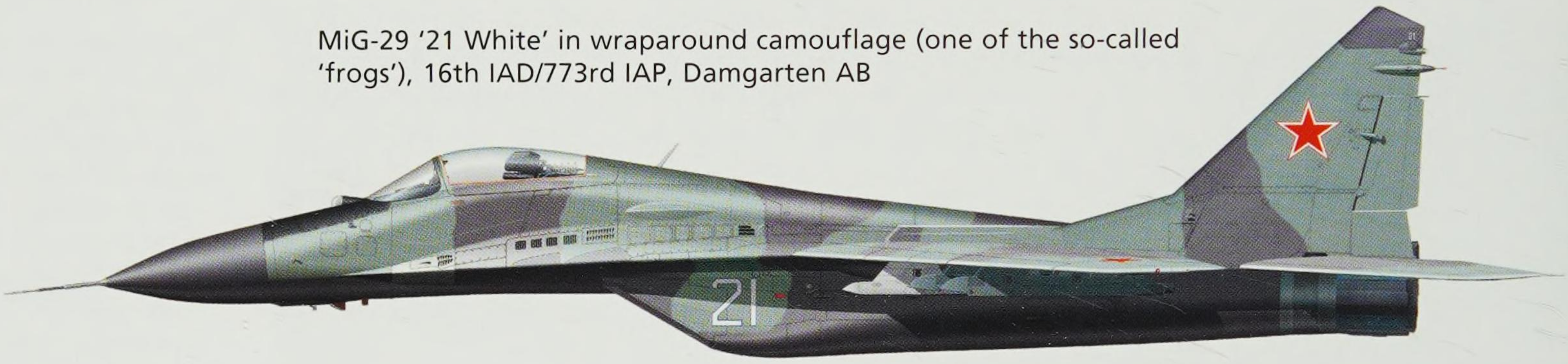
'72 White', another 787th IAP MiG-29, with ferry tanks for the journey home.



MiG-29 (*izdeliye* 9.12) *Fulcrum-A* '07 Orange', 6th IAD/968th IAP, Altenburg AB; note the unit insignia



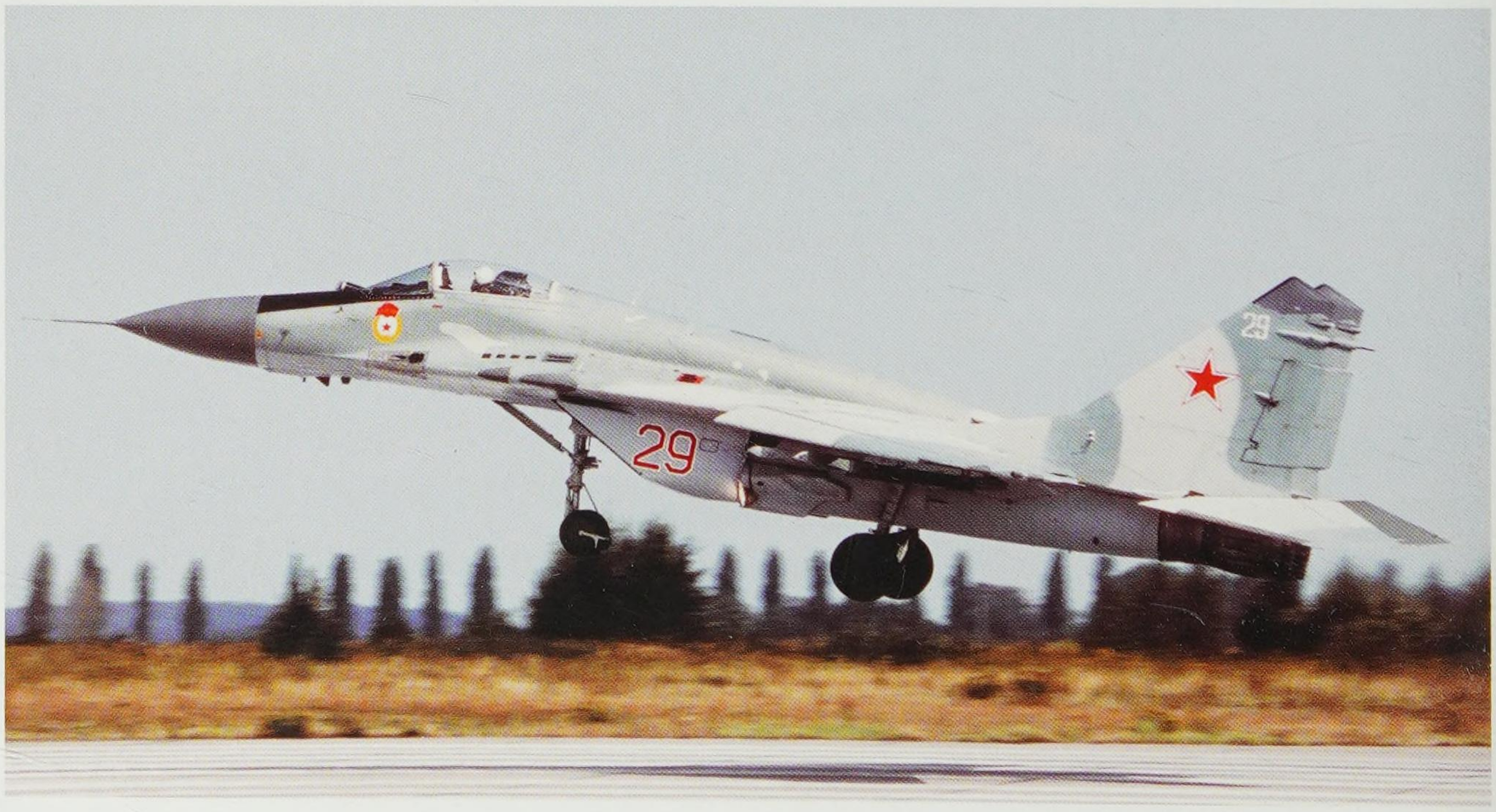
MiG-29 (*izdeliye* 9.12) '10 White', 16th IAD/33rd IAP, Wittstock AB; note the unofficial unit badge



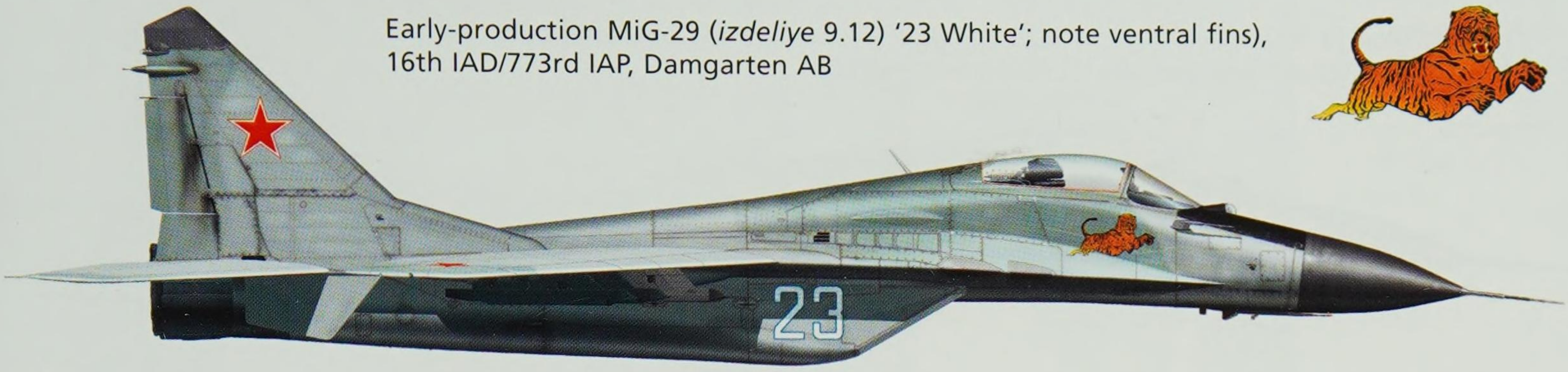
MiG-29 '21 White' in wraparound camouflage (one of the so-called 'frogs'), 16th IAD/773rd IAP, Damgarten AB

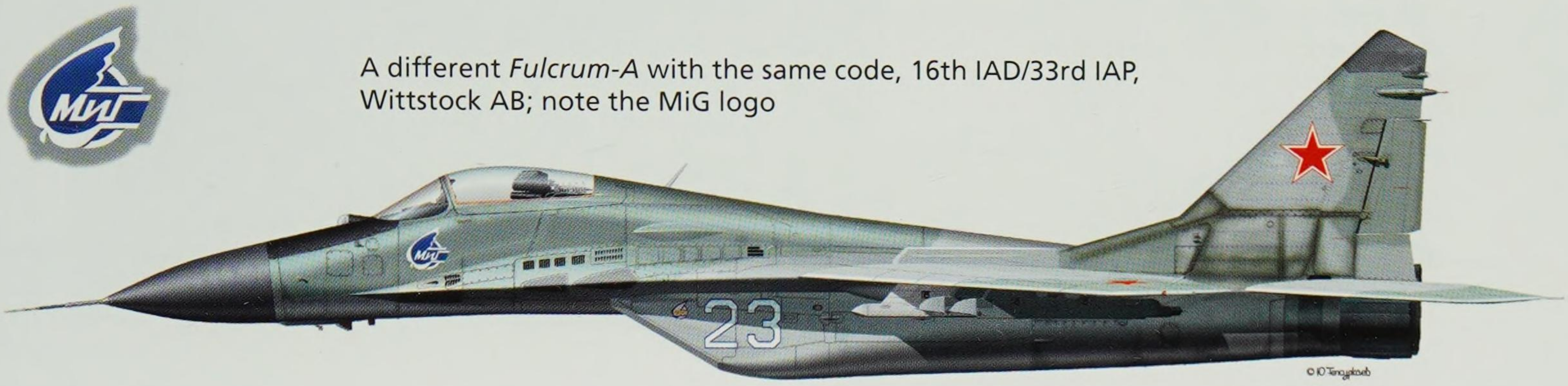
the 11th ORAP, operating mainly from Neu-Welzow and Werneuchen). In 1986 the *Brewer-E* was replaced by the Su-24MP *Fencer-F* operating from Neu-Welzow.

Proficiency training in the early days was performed on several Let C-11 (Czechoslovak-built Yak-11 *Moose*) trainers. Later the GSVG used the UTI-MiG-15 *Midget*, which outlasted the single-seat MiG-15 and MiG-17, serving on until the early 1980s. Purpose-built advanced trainers supplied by Czechoslovakia were also used – the Aero L-29 Delfin, which



A 31st GvIAP *Fulcrum-C* coded '29 Red' takes off from Falkenberg AB on a training sortie. Unusually, the tactical code is repeated on the fins proper rather than on the fin caps. Note the Guards badge on the nose.



Early-production MiG-29 (*izdeliye* 9.12) '23 White'; note ventral fins), 16th IAD/773rd IAP, Damgarten AB


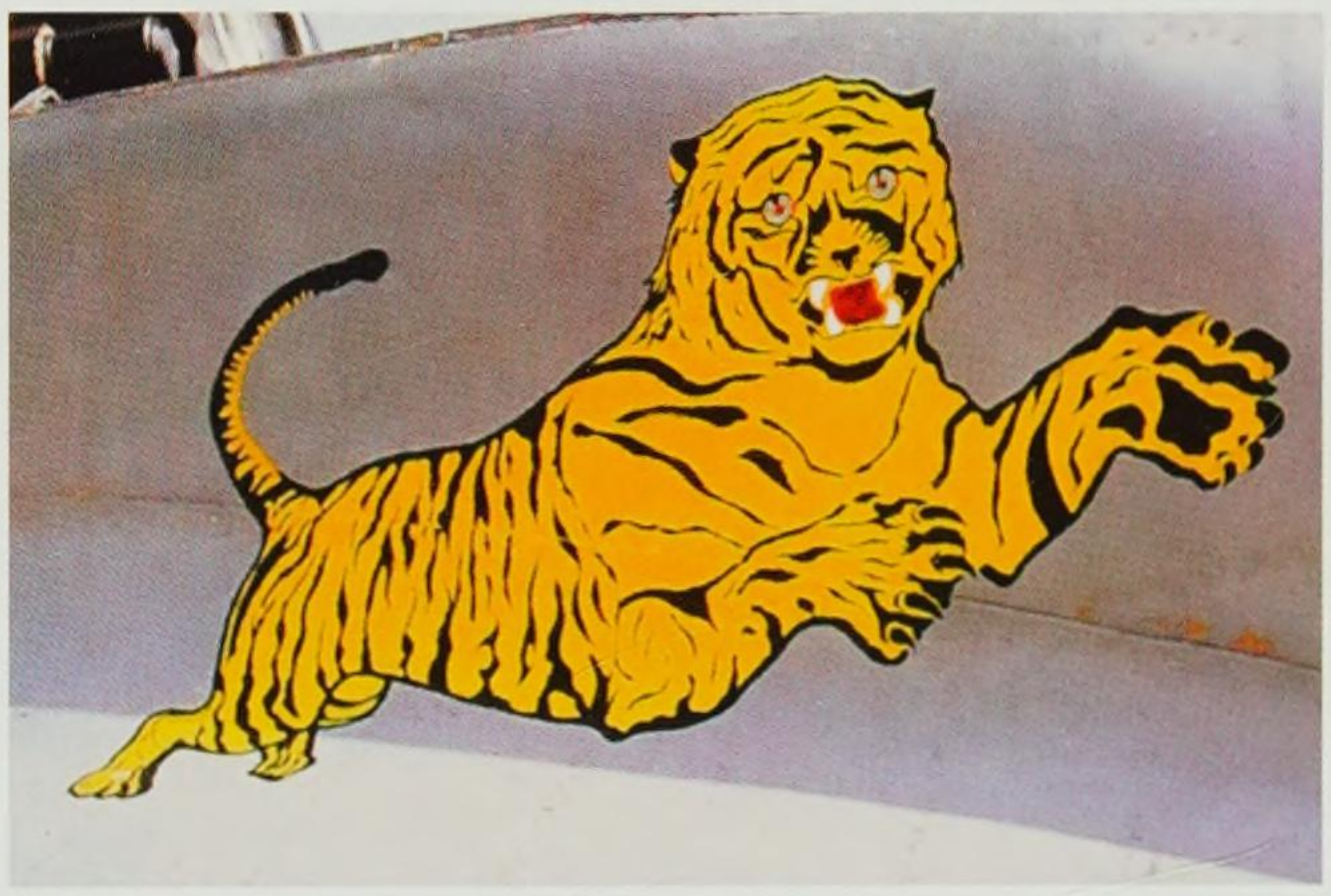
A different *Fulcrum-A* with the same code, 16th IAD/33rd IAP, Wittstock AB; note the MiG logo

was operated by the units at Brand and Brandis in 1969-1980, and the Aero L-39C Albatros, which saw service with the Su-25 regiments at Brandis and Tutow in the 1980s.

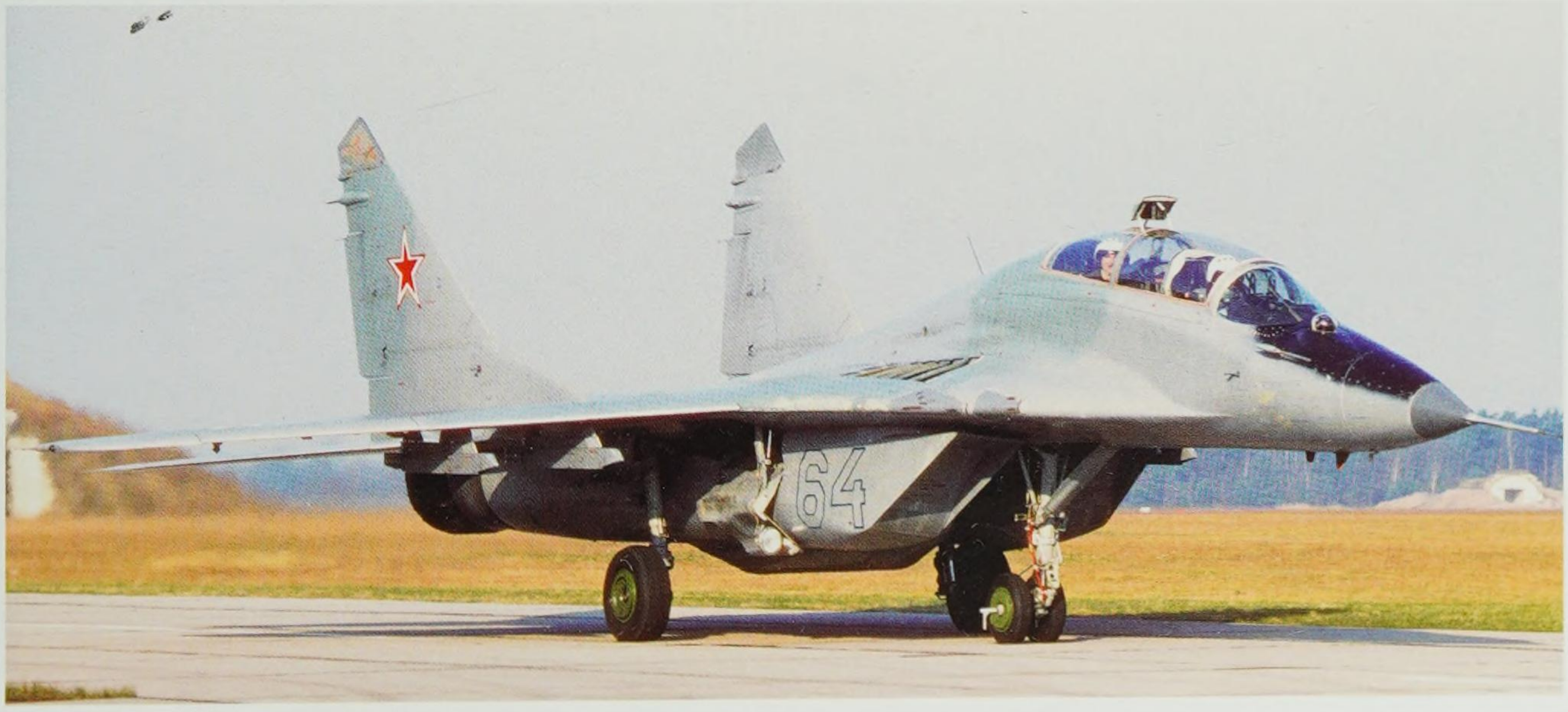
Training duties included target towing. To this end a target-towing flight with IL-28BM aircraft (*booksi***rov***shchik mi***shen***ey* – target tug) and Il-28Us initially operated from Berlin-Schönefeld airport but moved to Brand AB in 1954. It was later transformed to an independent target-towing squadron (OBMAE – *ot***del'***naya booksi***rov***ochno-mi***shen***naya* ***a****vi-aeskad***ril'***ya*), moving to Oranienburg in the autumn of 1971 and thence to Damgarten in 1977 where it stayed until 1979. Later, a flight of Su-25BM target tugs was based at Damgarten until 1990.

In 1992 the 16th VA was reorganised as the 16th Air Corps of the Moscow Military District, the HQ being located at Kubinka AB; the 226th OSAP moved to this base. Later the 16th VA got its original name back; it was eventually disbanded on 8th August 2008.

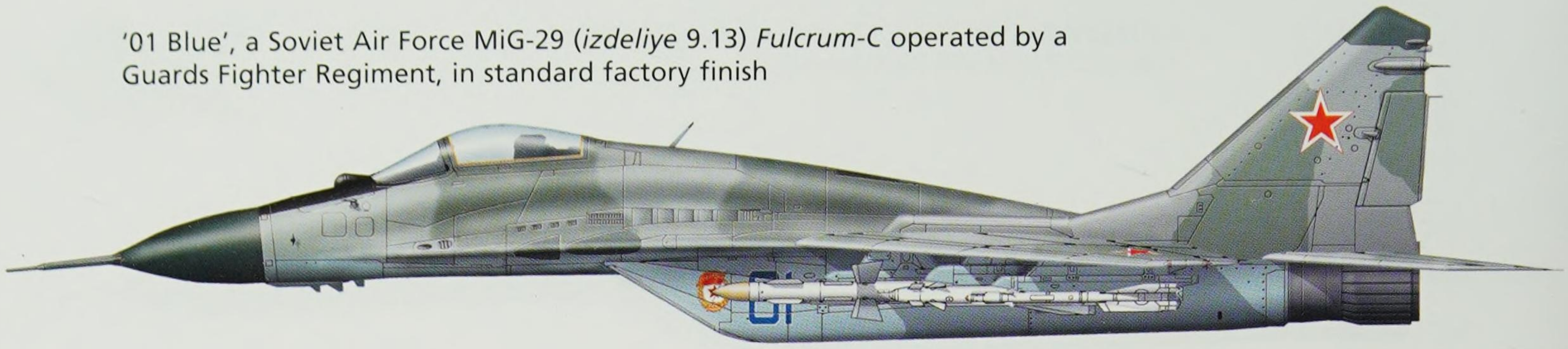
Apart from the 16th VA, the GSVG included ground forces: two tank armies – the 1st GvTA (*Gvar***dey***skaya* **tahn***kovaya* **ar***miya* –



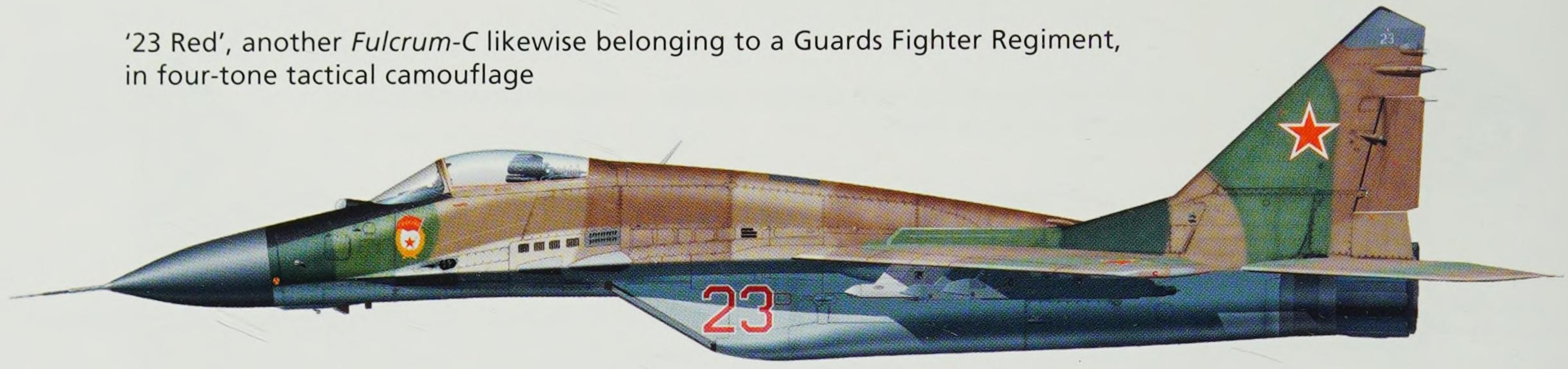
Here There Be Tygers. Some 773rd IAP *Fulcrums*, such as MiG-29UB '74 White' (pictured here) and MiG-29 '23 White', carried this leaping tiger nose art.



In contrast to the white-coded single-seaters, this 33rd IAP MiG-29UB had a low-visibility tactical code ('64 Black outline'). Note the scuffed paint on the dielectric fin caps.



'01 Blue', a Soviet Air Force MiG-29 (*izdeliye* 9.13) *Fulcrum-C* operated by a Guards Fighter Regiment, in standard factory finish



'23 Red', another *Fulcrum-C* likewise belonging to a Guards Fighter Regiment, in four-tone tactical camouflage

The Army Aviation order of battle in the GSVG as of 1990

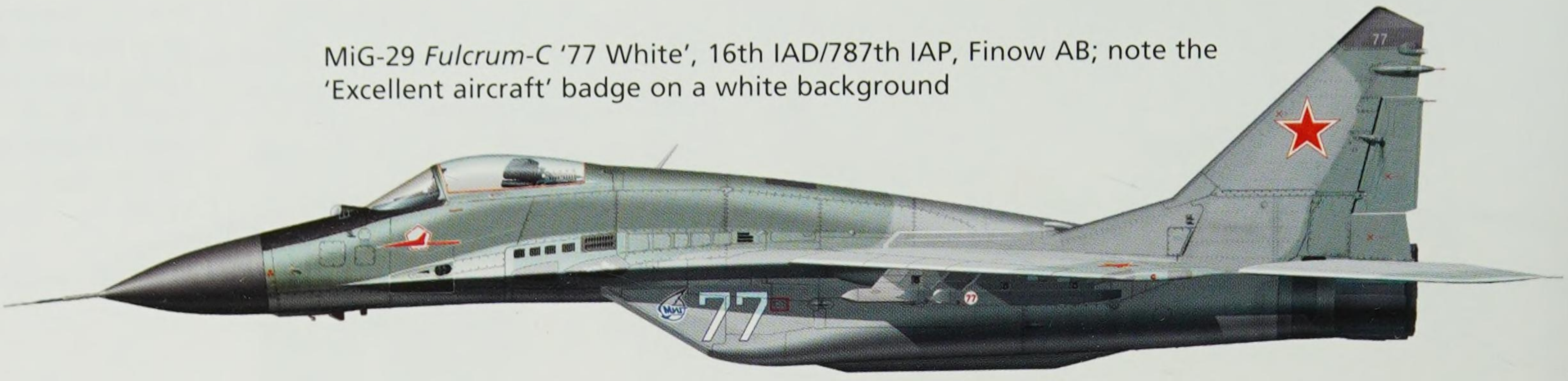
Unit	Base	Aircraft	Fleet	Notes
Direct reporting units				
113th OVE	Sperenberg	Mi-6AYa (Mi-22)	2	Withdrawn 27-7-94
		Mi-8T, Mi-8MTV	8	
		Mi-8TL	1	
		Mi-9	3	
		Mi-24R	3	
239th GvOVP	Oranienburg	Mi-6A	26	Withdrawn 18-6-94
		Mi-8T, Mi-8MT, Mi-8MTV	38	
292nd OVE	Cochstedt	Mi-8T, Mi-8PPA, Mi-8SMV	16	C^3I & ECM squadron. Withdrawn 7-7-92
		Mi-9	2	1st GvTA, HQ Dresden
225th OBVP	Allstedt	Mi-8T	10	Withdrawn 25-5-91
		Mi-9	4	
		Mi-24V	35	
485th OBVP	Brandis/Merseburg	Mi-8MT, Mi-8MTV, Mi-8VZPU	20	
		Mi-9	4	
		Mi-24V, Mi-24K	36	
6th OVE	Dresden-Hellerau	Mi-6VKP	1	C^3I & ECM squadron. Withdrawn 20-8-1992
		Mi-6AYa (Mi-22)	1	
		Mi-8T, Mi-8PPA	10	
		Mi-24K	2	
		Mi-24R	2	
2nd GvTA, HQ Fürstenberg				
172nd OBVP	Parchim	Mi-8T, Mi-8MTV	12	Withdrawn 21-12-92
		Mi-24V, Mi-24P	40	
439th OBVP	Parchim/Lärz	Mi-8T, Mi-8MTV, Mi-8VZPU	16	Withdrawn 13-11-92
		Mi-9	8	
		Mi-24V, Mi-24K, Mi-24R	40	
9th OVE	Neuruppin; Oranienburg	Mi-6VKP	1	C^3I & ECM squadron. Withdrawn 29-6-93
		Mi-6AYa (Mi-22)	1	
		Mi-8PPA, Mi-8VZPU	5	
		Mi-9	2	
		Mi-24K	2	
		Mi-24R	2	

The maintenance chief of a GSVG fighter unit briefing the 'black men' (technicians) for the day's work.

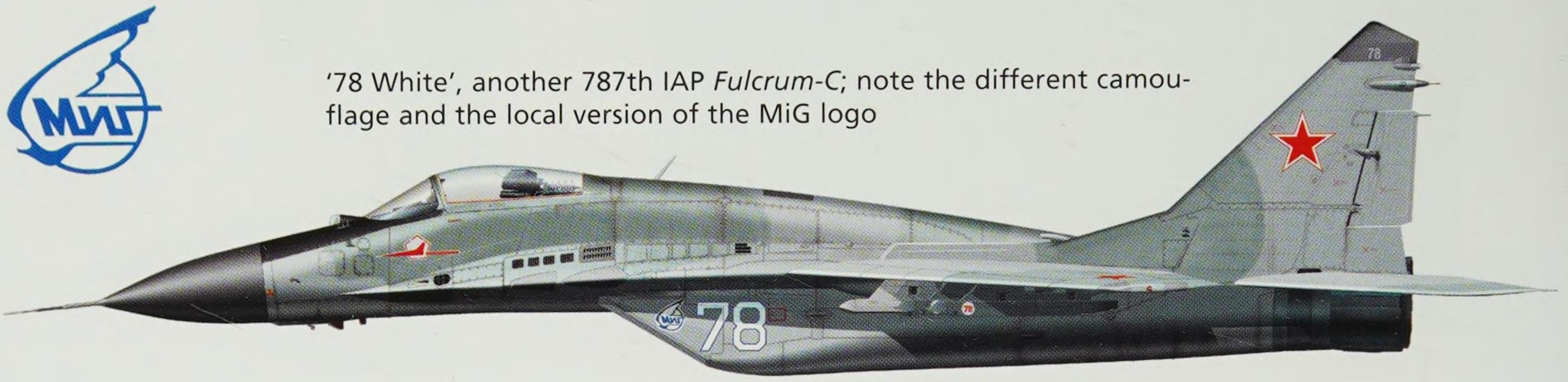
3rd OA, HQ Magdeburg				
178th OBVP	Stendal	Mi-8	10	Withdrawn 18-6-92
		Mi-24V, Mi-24P	42	
440th OBVP	Stendal	Mi-8T, Mi-8MT, Mi-8MTV, Mi-8VZPU		Withdrawn 14-7-92
		Mi-9		
296th OVE	Magdeburg	Mi-6VKP	2	C^{3}I squadron. Withdrawn 16-6-92
		Mi-8T	6	
		Mi-9	4	
8th GvOA, HQ Weimar-Nohra				
336th OBVP	Weimar-Nohra	Mi-8T	16	Withdrawn 5-92
		Mi-24V	40	
486th OBVP	Jüterbog-Altes Lager	Mi-8T, Mi-8MTV	12	Withdrawn 1-8-91
		Mi-9	4	
		Mi-24V, Mi-24R	32	
298th OVE	Haßleben	Mi-2	9	C^{3}I squadron. Withdrawn 16-6-92
		Mi-6AYa (Mi-22)	1	
		Mi-8T	3	
		Mi-24K	2	
		Mi-24R	2	
20th GvOA, HQ Finow				
337th OBVP	Mahlwinkel	Mi-8T, Mi-8TV, Mi-8MT, Mi-8MTV, Mi-8VZPU	16	Withdrawn 24-5-94
		Mi-24V, Mi-24P	40	
487th OBVP	Templin; Werneuchen	Mi-8MT, Mi-8MTV, Mi-8VZPU	18	Withdrawn 12-8-93
		Mi-9	4	
		Mi-24V, Mi-24K, Mi-24R	26	
41st OVE	Finow, Werneuchen	Mi-6VKP	1	C^{3}I squadron. Withdrawn 27-7-93
		Mi-6AYa (Mi-22)	3	
		Mi-8T	2	
		Mi-24K	2	
		Mi-24R	2	

Notes: OVE = *ot**del'**naya verto**lyot**naya eska**dril'**ya* – independent helicopter squadron; GvOVP = *Gvar**dey**skiy ot**del'**nyy verto**lyot**nyy polk* – independent Guards helicopter regiment; OBVP = *ot**del'**nyy boye**voy** verto**lyot**nyy polk* – independent combat helicopter regiment.

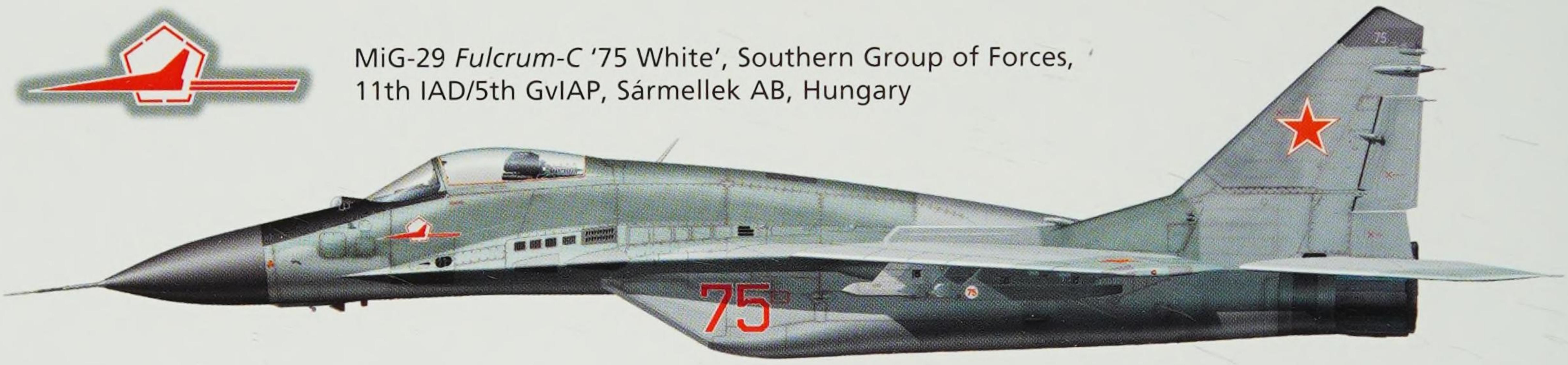
MiG-29 *Fulcrum-C* '77 White', 16th IAD/787th IAP, Finow AB; note the 'Excellent aircraft' badge on a white background



'78 White', another 787th IAP *Fulcrum-C*; note the different camouflage and the local version of the MiG logo

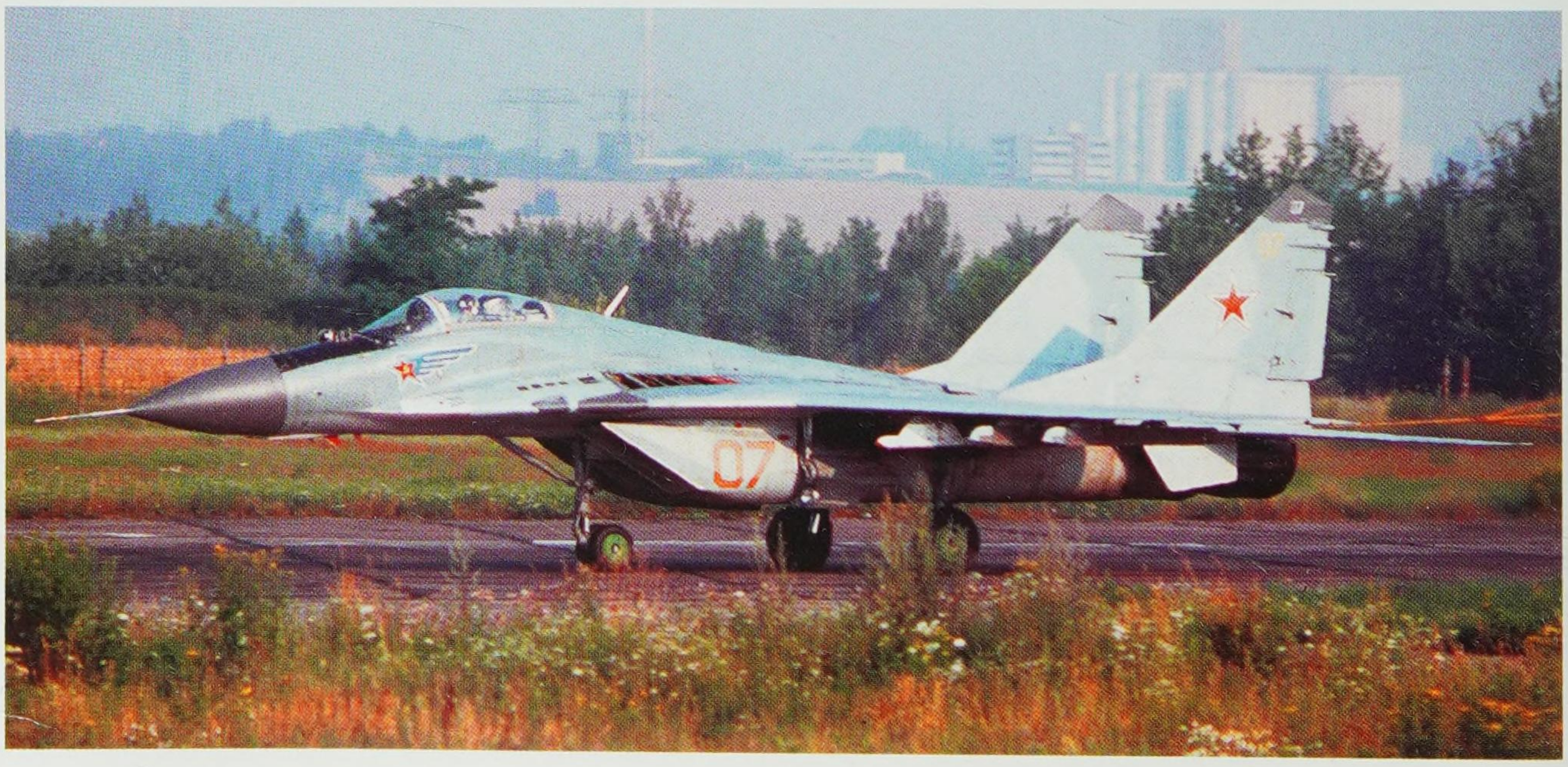


MiG-29 *Fulcrum-C* '75 White', Southern Group of Forces, 11th IAD/5th GvIAP, Sármellek AB, Hungary

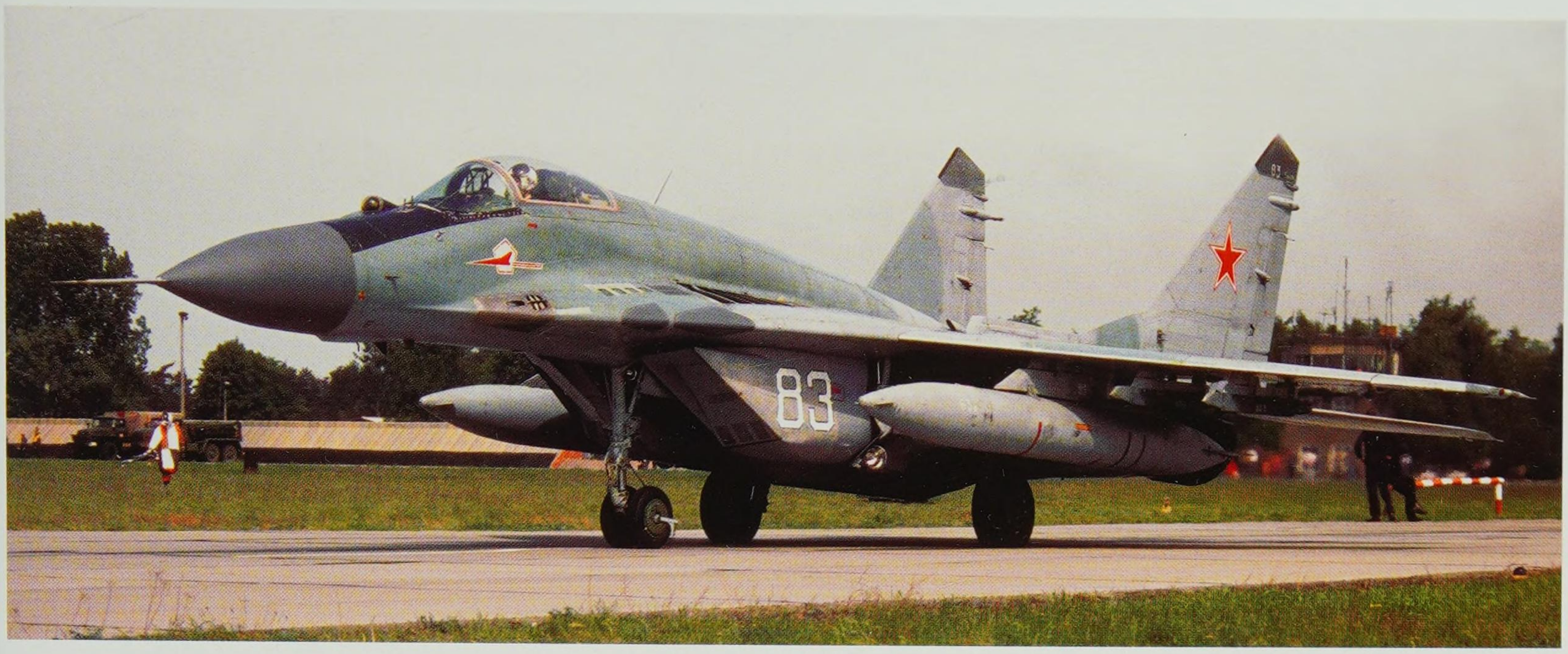


Guards tank army) and 2nd GvTA – and three mechanised infantry armies: the 3rd OA (***ob**schchevoyskova**va**ya armiya* – mechanised infantry army), 8th GvOA and 20th GvOA. Apart from armour, mechanised infantry, automobile and other units, each army had an aviation component of transport, assault and special-mission helicopters.

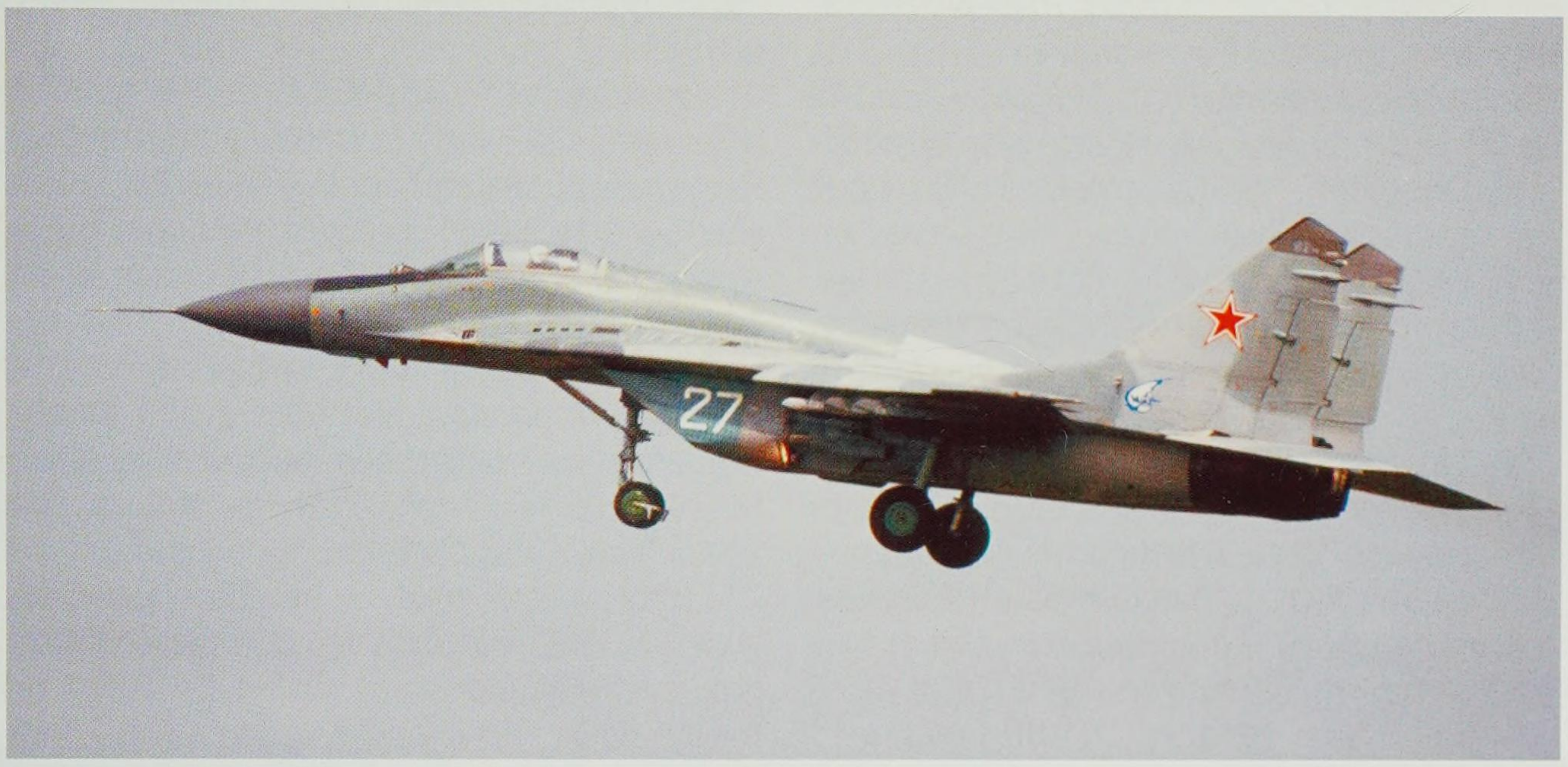
Again, a variety of rotary-wing types saw service with the GSVG/ZGV, filling different roles. The most important one was the transport/assault role, which was initially filled by the Mil' Mi-4 *Hound*. The type saw service in 1955-78; most examples were pure transport Mi-4Ts or Mi-4AV transport/assault helicopters armed with a machine-gun and rocket pods.



'07 Orange', a 968th IAP aircraft, was the oldest known MiG-29 to be stationed in East Germany. Unusually, the tactical code is repeated *twice* on the fins.



'83 White', a 787th IAP MiG-29, carries an 'Excellent aircraft' badge. This aircraft was previously operated by the 5th GvIAP in Hungary.



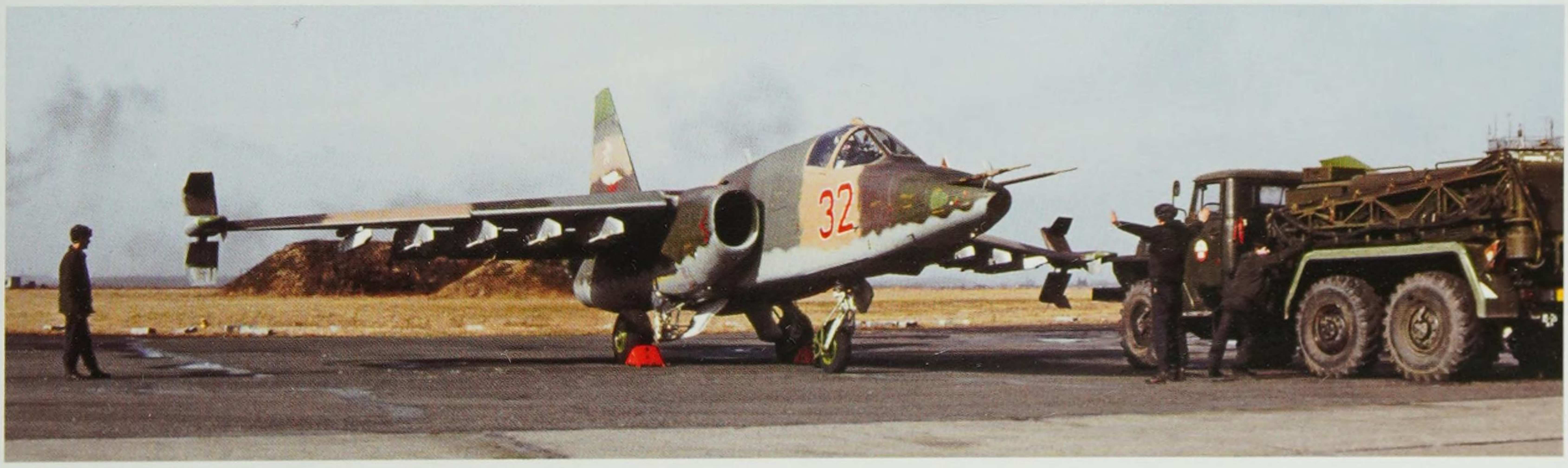
'27 White', a 787th IAP aircraft, carries a MiG OKB badge in an unusual position on the tails.

The GSVG command also had a couple of Mi-4S VIP helicopters at its disposal. In the 1970s the Mi-4 was completely replaced by the twin-turboshaft Mi-8.

The Mi-6 *Hook* heavy-lift helicopter was introduced in 1961, serving with the 239th GvOVP; the initial Mi-6 *sans suffixe* was augmented/replaced by the improved Mi-6A in 1970. Initially operating from Brandis, the 'big lifters' moved to Oranienburg in 1977, where they stayed until the final pullout in 1994.

The mainstay of the GSVG's helicopter force was the Mi-8, which first appeared on German soil in 1969. Initially the Mi-8T *Hip-C* (both armed and unarmed) and the more heavily armed Mi-8TV *Hip-E* (since 1976) were used for transport and assault duties; a number of Mi-8VSMs equipped for aerial minelay-

'32 Red', a 357th OShAP Su-25, is started up at Brandis AB, using an APA-5D ground power unit.



Su-25s on the 368th OShAP flight line at Tutow AB.

ing (*voz***doosh***naya sis***tem***a mi***nee***rovaniya*) was also operated (for example, by the 41st OVE at Werneuchen). From 1986 onwards the Mi-8T was progressively replaced by the 'second-generation' Mi-8MT and Mi-8MTV *Hip-H* transport/assault helicopters. These served on until 1994; a 113th OVE Mi-8MTV was the last Russian military helicopter to leave Germany. Staff transport duties were handled by Mi-8TP and Mi-8PS helicopters, which were introduced in 1973.

The other mainstay of the GSVG's helicopter force was, of course, the Mi-24 assault helicopter. The first to arrive was the original 'squarehead' Mi-24A *Hind-A*, which was fielded in East Germany in 1972. From 1976 onwards it was replaced by the redesigned Mi-24D *Hind-D* with stepped-tandem cockpits, which was in service with the GSVG in 1976-91. The Mi-24V *Hind-E* armed with more capable anti-tank missiles followed in 1976, and the cannon-armed Mi-24P *Hind-F* in 1981.

For aerial reconnaissance the Army aviation units used the Mi-8T(K) battlefield reconnaissance helicopters equipped with oblique cameras, which were used for reconnaissance along the border with West Germany. From 1987 onwards they were progressively replaced by the similarly equipped Mi-24K *Hind-G2*, which stayed until 1993. NBC reconnaissance was performed by the specialised Mi-24R *Hind-G*, which saw service in the GSVG from 1986 onwards.

Other special mission helicopters serving with the GSVG/ZGV included ECM helicopters – first the Mi-4PRP, which was superseded by the Mi-8PPA *Hip-K* and Mi-8SMV *Hip-J*; the latter saw service in East Germany from 1979 and 1980 respectively. In 1964-72 a single example of the rare Mi-10PP *Harke* equipped with a podded powerful jammer saw service

4th Air Army/89th BAP Su-24M '23 White' is caught by the camera as it becomes airborne at Szprotawa AB, Poland.

with the 239th GvOVP, participating in a Soviet Army exercise at the Colbitz-Letzlinger Heide training ground in 1965, among other things.

The command and control squadrons of the mechanised infantry and tank armies operated several command post helicopters – the Mi-6VKP (*voz**doosh**nyy ko**mahnd**nyy poonkt* – ABCP) from 1972 and the Mi-6AYa (Mi-22) from 1978. Actually the Mi-6VKP belied its 'airborne command post' name, since it could perform its functions only after deploying its aerials on the ground, which is why it was augmented by the Mi-22. The Mi-8, too, had two command and control versions: the Mi-8VZPU *Hip-D* (*voz**doosh**nyy zapas**noy** poonkt oopravl**en**iya* – airborne reserve command post) and the Mi-9 (Mi-8IV) *Hip-G*, which were deployed with the GSVG/ZGV from 1969 and 1980 respectively.

The first Soviet helicopters in Germany were Mi-1 *Hare* light helicopters used for liaison duties by the army HQs. The three-seat Mi-1T was introduced in 1951 but its capabilities were rather limited; it was not until 1958 that it was replaced by the four-seat Mi-1M. The Mi-1U/Mi-1MU trainer versions with dual controls were also used. The type operated from such bases as Brandenburg-Neuendorf, Erfurt, Oranienburg, Schönwalde, Stendal and Werneuchen.

The *Hare*'s successor was the twin-turboshaft Mi-2 *Hoplite*, which again was operated mainly in support of the army HQs. The Mi-2 was based at Dresden-Hellerau, Finow, Haßleben, Jüterbog-Altes Lager, Oranienburg and Werneuchen.

Another 89th BAP Su-24M 'cleans up' after takeing off from Szprotawa.

Northern Group of Forces

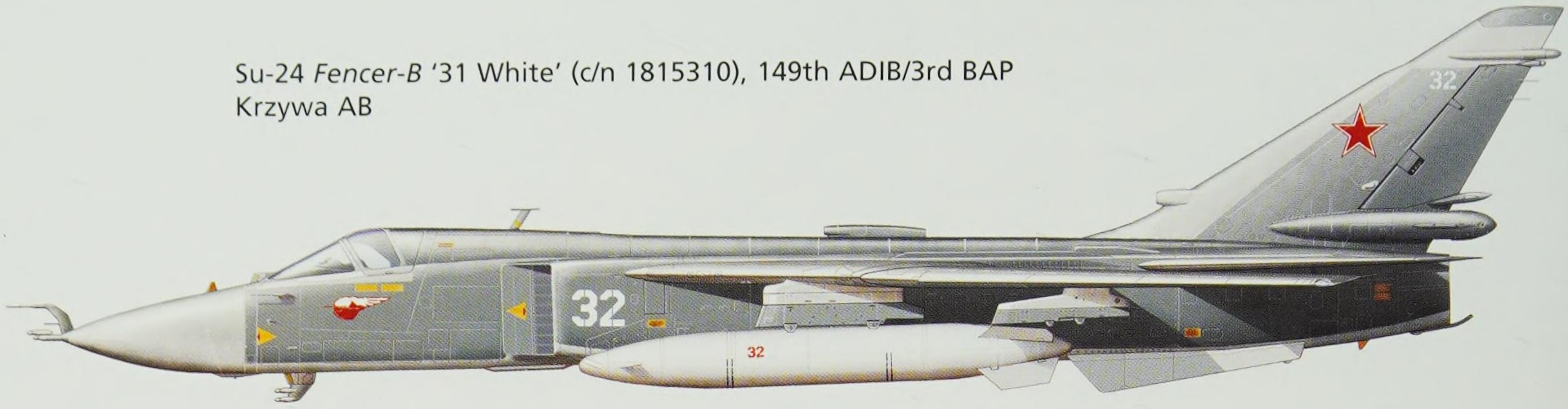
After the Second World War a large contingent of Soviet troops known as the Northern Group of Forces (SGV – ***Sev****ernaya* ***groop****pa voysk*) was stationed in the People's Republic of Poland. Its aviation component was initially known as the 37th Air Army. This was the former 4th VA that had fought on various fronts of the Great Patriotic War since 1942, ending

The Northern Group of Forces/4th VA order of battle in 1968

Unit	Base	Aircraft	Notes
Direct reporting units			
164th *Kerchenskiy* GvORAP	Brzeg AB	Yak-27R	Opole County, Lower Silesia Voïvodeship. The unit was awarded the Red Banner Order; deployed at Brzeg from 31-12-58 to 1-8-90
245th OSAE	Legnica AB		
239th *Baranovichskaya* Red Banner IAD, HQ Kłuczewo			
159th *Novorossiyskiy* GvIAP	Kłuczewo AB	MiG-21R	Aka Stargard AB. The unit was awarded the Red Banner Order and the Order of Suvorov (3rd Degree)
582nd IAP	Chójna AB	MiG-21PF MiG-21PFM	
871st *Pomeranskiy* IAP	Kołobrzeg AB	MiG-21PFM	Aka Bagicz AB
149th IBAD, HQ Szprotawa			
3rd IBAP	Krzywa AB	Su-7B	Zielona Góra County, Lubusz Voïvodeship. The unit was awarded the Red Banner Order
42nd *Tannenbergskiy* GvIBAP	Żagań AB	MiG-17F MiG-17PF	The MiG-17Fs were converted to fighter-bombers
89th IBAP	Szprotawa AB	MiG-17F	Żagań County, Lubusz Voïvodeship. The MiG-17Fs were converted to fighter-bombers

Note: The 164th GvORAP received its Guards status and honorary appellation ***Ker****chenskiy* on 24th March 1944 for its part in liberating the city of Kerch in the Crimea, the Ukraine. The 239th *Bara**nov**ichskaya* IAD was thus named for the part it played in liberating the Belorussian town of Baranovichi; likewise, the 159th *Novoros**siy**skiy* IAP got this appellation for liberating the Russian seaport of Novorossiysk. The 42nd ***Tan****nenbergskiy* GvIBAP was thus named for its part in taking the German town of Tannenberg.

Su-24 *Fencer-B* '31 White' (c/n 1815310), 149th ADIB/3rd BAP Krzywa AB

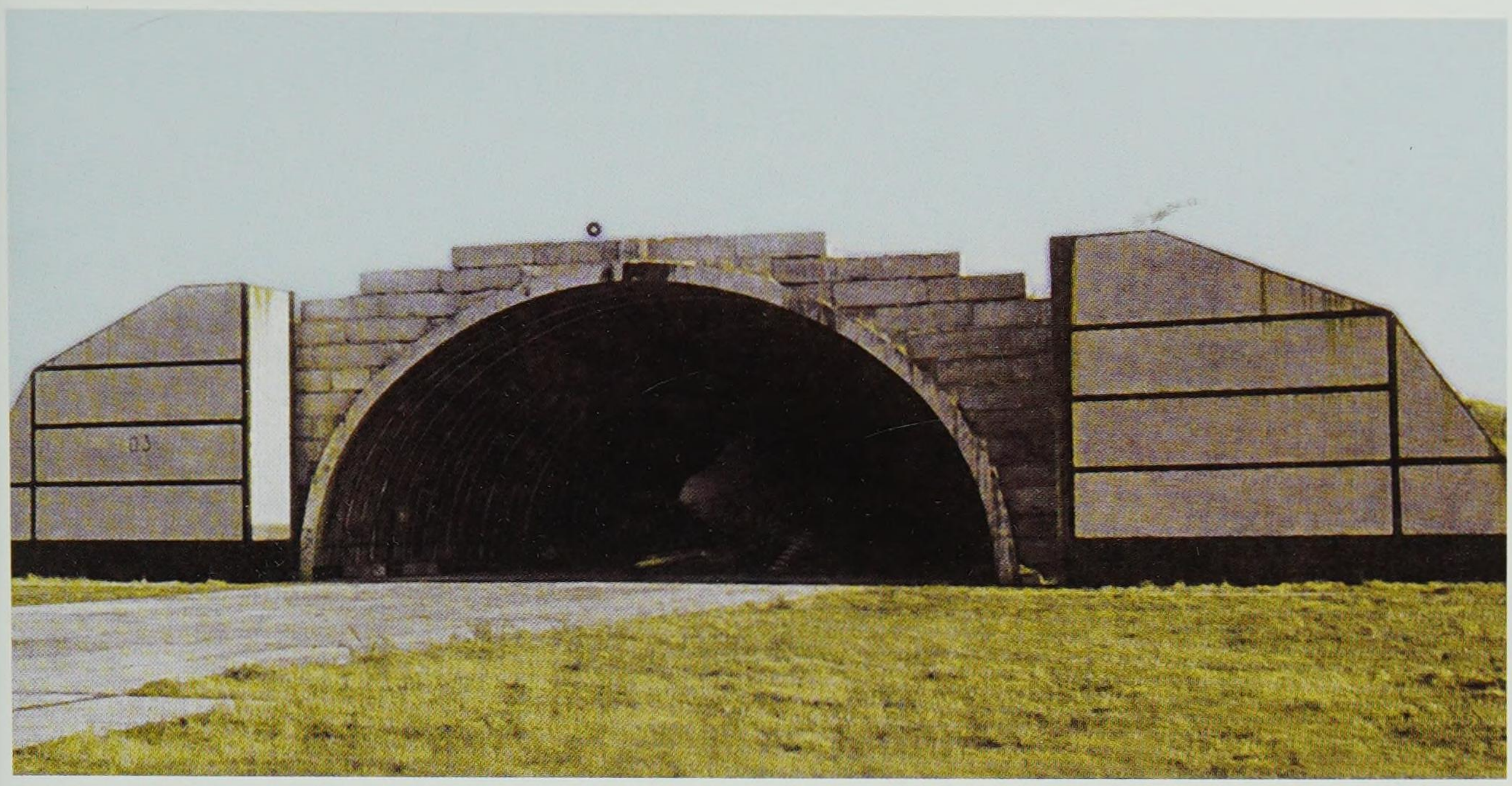


the war in Berlin; in those days the air army had included three fighter divisions, two bomber divisions, an attack division and seven composite air regiments.

On 22nd February 1968, in anticipation of Soviet Army Day (23rd February, a major public holiday), the 37th VA was awarded the Order of the Red Banner of Combat in recognition of its wartime merits. Just over a month later, on 4th April, the Air Army regained its wartime identity, becoming the 4th VA once again. The official reason behind this was the wish to keep up traditions and boost the morale of the personnel. Much later, in 1998, the designation '37th VA' was reallocated to the Russian Air Force's strategic bomber arm as a whole (the 37th Air Army of the Supreme High Command).

The 37th VA (later 4th VA) was headquartered in the town of Legnica, Lower Silesian

3rd BAP Su-24 *Fencer-Bs* '31 White' and '29 White' with long-range drop tanks depart Krzywa AB en route to Russia.



A 239th IAD/ 582nd IAP Su-27 in its HAS at Chójna AB.

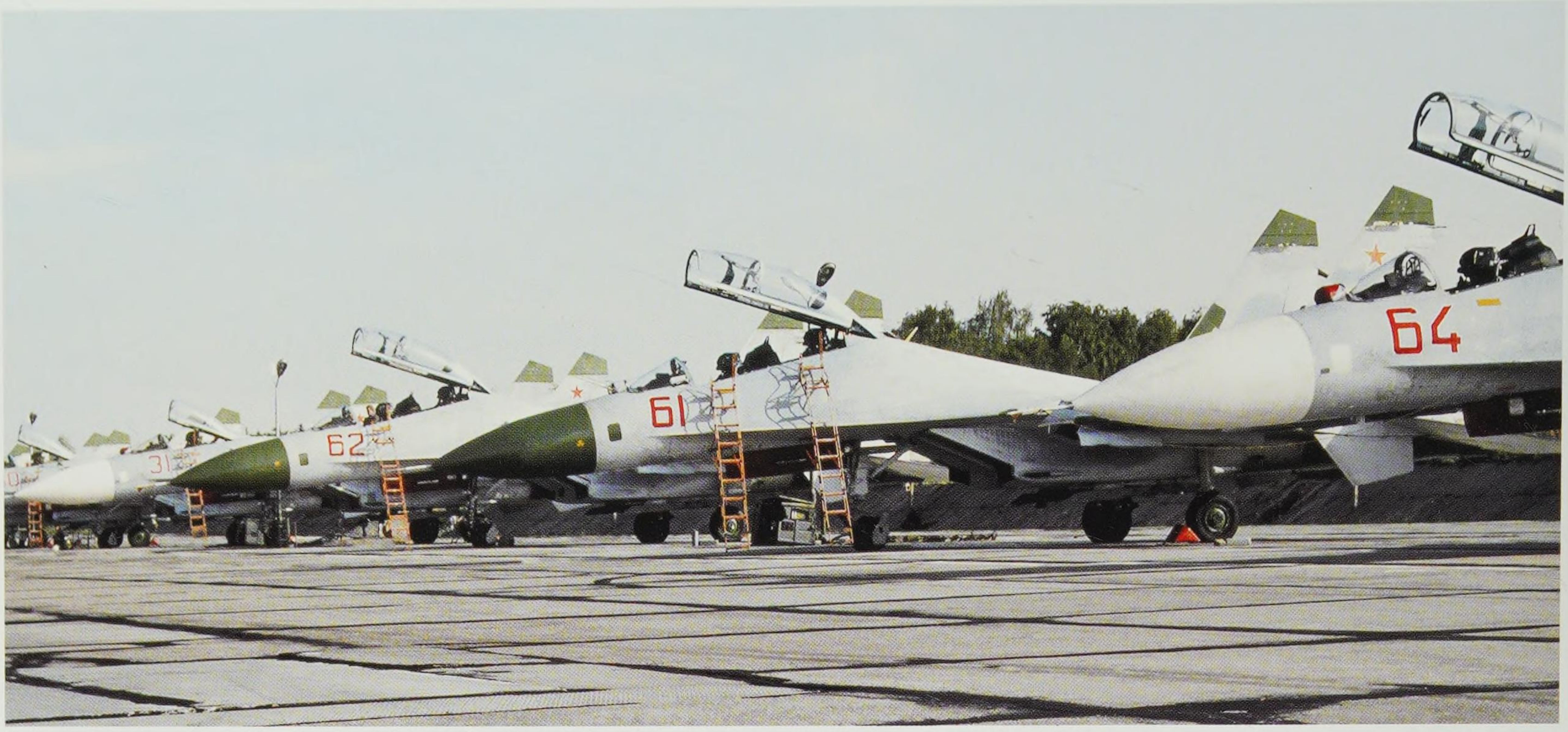
An enamel badge commemorating the 35th anniversary of the Northern Group of Forces' establishment.

Voïvodeship (province). It included two air divisions – the 'northern' 239th Fighter Division and the 'southern' 149th Fighter-Bomber Division, as well as direct reporting units – a reconnaissance regiment and a composite air squadron tasked with transport duties (unlike the Western and Southern Groups of Forces, this was a squadron, not a regiment). Brzeg AB (aka Skarbimierz AB) was the biggest Soviet base in Poland and hosted a succession of units. In addition to its regular bases, the 239th IAD used the training grounds at Podborsko and Nadarzyce (the latter was jointly operated with the Polish Air Force), as well as auxiliary airfields with grass runways – Dębica (25 km/15.5 miles south of Kołobrzeg) and Sniatowo. The 149th IBAD used the Przemków-North and Przemków-South training grounds and the Brochocin auxiliary airfield 16 km (10 miles) west of Legnica.

In August 1968 the units of the 4th VA and the army aviation assets of the SGV took part in Operation *Dunai* (Danube) – that is, the Soviet invasion of Czechoslovakia – along with other WarPac forces. The Soviet contingent in Poland put up Su-7 fighter-bombers and Mi-6 helicopters.

Again, over the years the 4th VA was progressively re-equipped with more modern aircraft; in so doing some units changed their specialisation, becoming bomber regiments. For example, the MiG-15*bis Fagot-B* fighter

Two Su-27UBs of the 239th IAD/ 159th GvIAP at Kłuczewo AB.

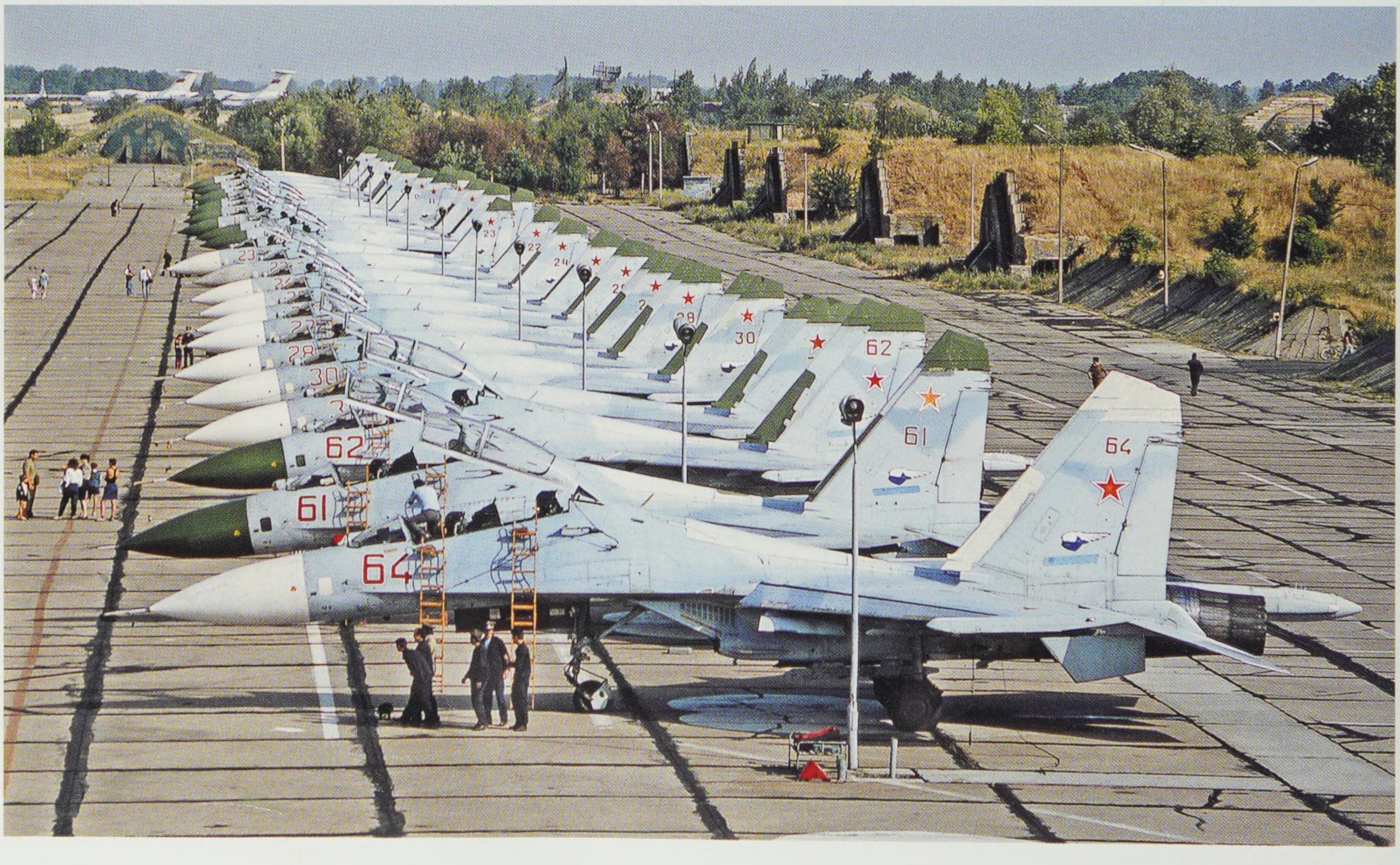


Two views of the 159th GvIAP Su-27s and Su-27UBs on the flight line at Kłuczewo AB. Note the different radome colours on aircraft built in different years.

was still operated by the 159th GvIAP in 1961; the unit was then based at Żagań AB and had 25 such aircraft.

The MiG-17 was operated by the 149th IAD's 3rd IAP at Szprotawa AB (from June 1955 to September 1961) and 18th IAP (also at Szprotawa AB, from 11th June 1955 to 1974), the 239th IAD's 42nd GvIAP at Żagań AB (from May 1955 to 1972) and 159th GvIAP (also at Żagań AB). The latter unit received its first five *Fresco-As* in January 1954, followed by five MiG-17P *Fresco-B* and five MiG-17PF *Fresco-D* all-weather interceptors two years later. In May 1955 the 42nd GvIAP was transferred to the 149th IAD to become a fighter-bomber unit (the 42nd GvIBAP), retaining its *Frescos*, including the MiG-17PFs.

Later, the MiG-19 was deployed in Poland, serving with the 4th VA until replaced by the Yak-28P and the MiG-21. Various versions of the *Fishbed* were used. The first production version, the twin-cannon MiG-21F, served



A pair of 159th IAP Su-27s departs on a training sortie.

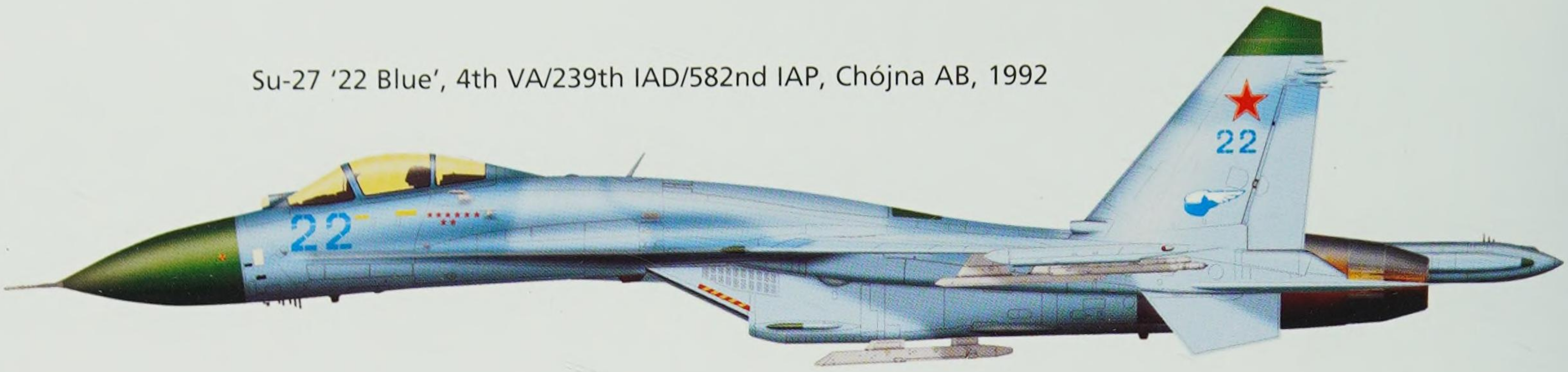
with the 159th GvIAP in 1961-62; in 1963 it was superseded by the missile-armed MiG-21F-13, of which 21 were on strength. The MiG-21PF was operated by the 159th GvIAP, which moved to Kłuczewo (Stargard) AB in 1964 (the unit had 12 *Fishbed-Ds* in 1964 and 29 in 1965), and the 582nd IAP at Chójna. The improved MiG-21PFM served with the 159th GvIAP (12 were operated alongside the 'PF in 1965), the 582nd IAP and the 871st IAP at Bagicz AB.

The MiG-21SM also saw service with the 159th GvIAP (14 aircraft in 1970 and 39 in 1971); the 'fatback' MiG-21SMT was operated by the same unit (from the mid-1970s to 1987) and the 582nd IAP. The MiG-21UM *Mongol-B* trainer was also operated; for example, the 159th GvIAP had five two-seaters.

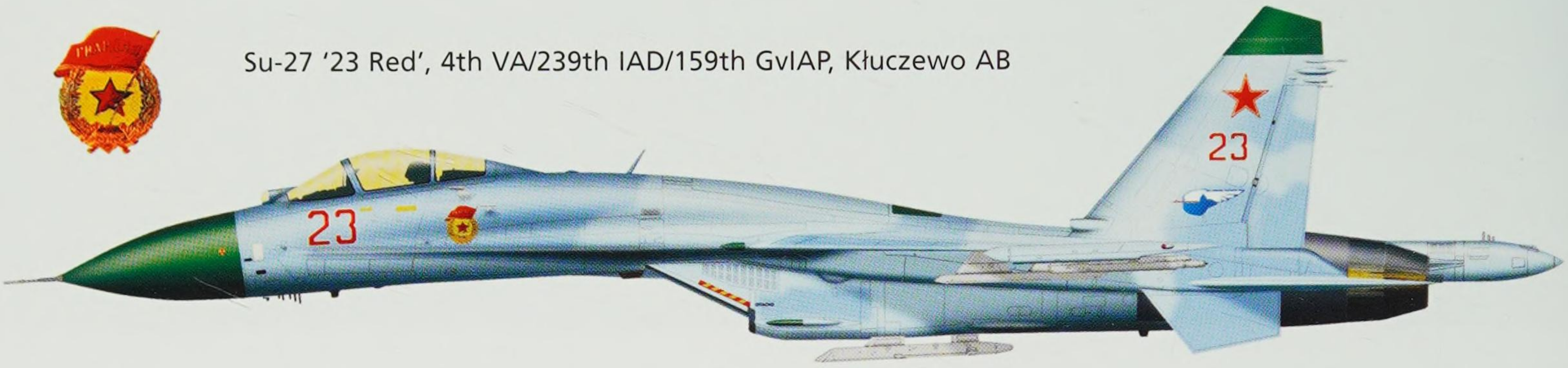
Various versions of the MiG-23 were deployed on Polish soil. The 871st IAP operated the type, starting with the MiG-23S *Flogger-A* in the mid/late 1970s; later it gave way to the MiG-23ML *Flogger-G* and then to the MiG-23MLD *Flogger-K*. A number of MiG-23UB trainers were also operated. In 1989 the unit hastily moved to Brzeg in the wake of a major international incident. A MiG-23MLD suffered engine trouble immediately after take-off; the pilot ejected but, instead of crashing straightaway, the fighter stabilised and flew on westward in unmanned mode. Eventually it ran out of fuel over

'51 Red', another 159th IAP *Flanker-B*, basks in the sun at Kluczewo AB.

Su-27 '22 Blue', 4th VA/239th IAD/582nd IAP, Chójna AB, 1992

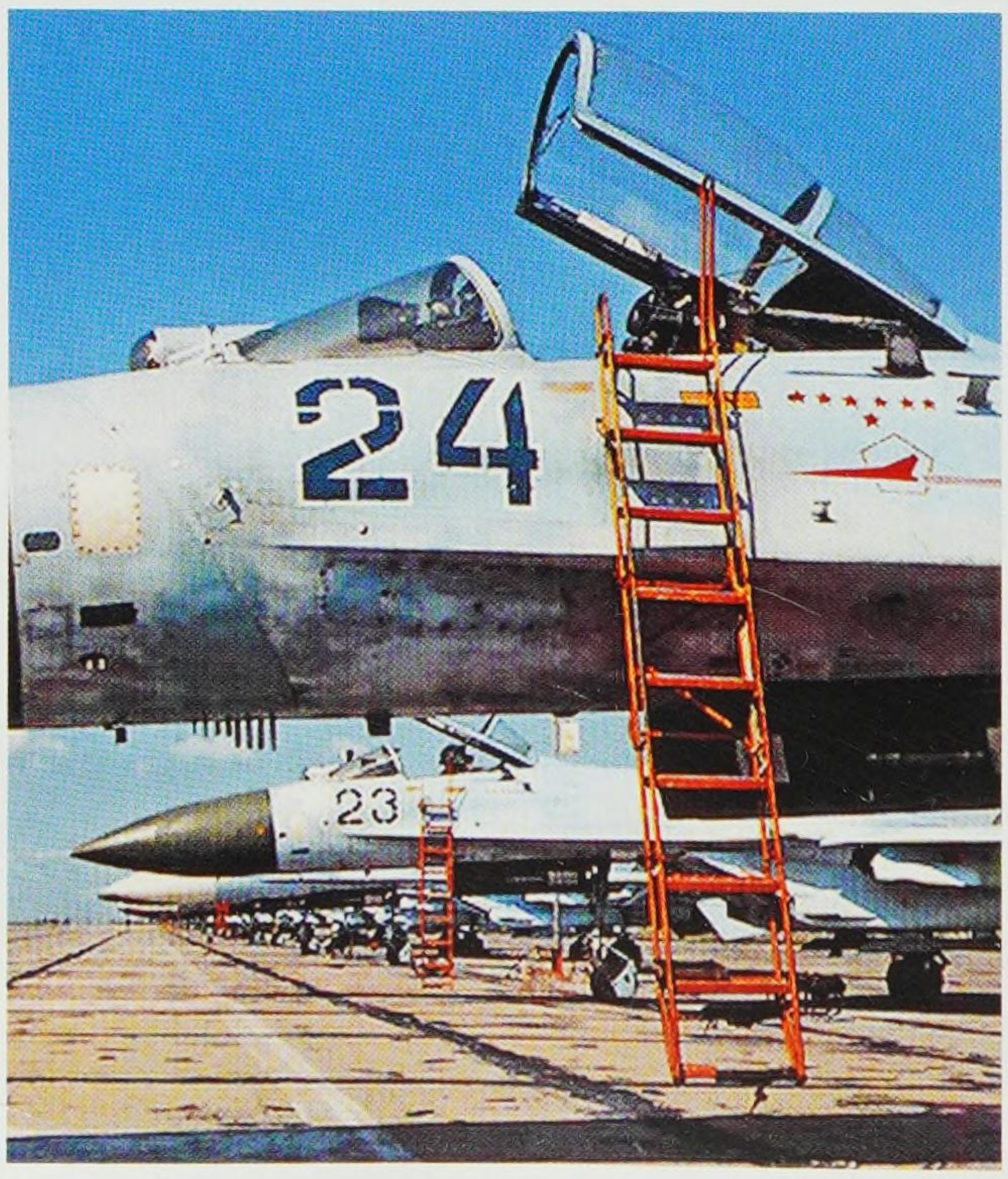


Su-27 '23 Red', 4th VA/239th IAD/159th GvIAP, Kłuczewo AB



Kortrijk, Belgium, and crashed into a house, killing one of the residents. The 871st IAP's blue tactical codes were changed to yellow after the move in a further effort to disguise it. Yet, in 1990 (some sources say 19th June 1991) the regiment pulled out of Poland altogether, redeploying to Smolensk.

Poland was the sole WarPac nation where Soviet Air Force Su-27 fighters were stationed. The first three *Flanker-B* single-seaters delivered to the 159th GvIAP arrived at Kłuczewo AB from Mirgorod, the Ukraine, on 11th July 1987. The complement eventually increased to 37 aircraft, including six two-seat Su-27UB *Flanker-Cs*; all of them had red codes. The 582nd IAP at Chójna AB also re-equipped with the Su-27 in due course, receiving 34 aircraft with blue codes delivered in 1988-89. In 1992 both units departed to Russia during the Russian Armed Forces' pullout from Eastern Europe.



The other Su-27 unit deployed in Poland was the 582nd IAP at Chójna AB. '24 Blue' in the foreground wears an 'Excellent aircraft' badge and six mission markers.

The fighter-bomber component was initially represented by suitably modified MiG-17Fs which saw service with the 3rd IBAP (the former 3rd IAP) at Szprotawa AB, 42nd GvIBAP at Żagań and 89th IBAP at Szprotawa. In March 1961 the 3rd IBAP began its transition from the MiG-17 to the Su-7B. Barely five months later the unit moved to the nearby Krzywa AB. The 89th IBAP also converted to the *Fitter-A* in due course.

In 1975 the Northern Group of Forces received the Su-17M. The *Fitter-C* was operated by the 149th IBAD/89th IBAP and the 18th IBAP; both units (previously Su-7 operators) were based at Szprotawa AB. The former unit (restyled as the 89th APIB a year later) retained the type until 1982.

In June 1976 the 3rd APIB began its conversion to the Su-24 *sans suffixe* (*Fencer-B*) tactical bomber to become the 3rd BAP. The 89th APIB followed suit in 1982, becoming the 89th BAP; originally it, too, operated the *Fencer-B* but re-equipped with the Su-24M (the *Fencer-Ds* were ferried to Szprotawa from Cherlyany AB near L'vov, the Ukraine).

Another strike asset of the 4th VA was the MiG-25BM SEAD aircraft. This was operated by the 164th GvORAP at Brzeg AB (Skarbimierz AB) – for the simple reason that

A pair of red-coded Su-27s from Kłuczewo patrols the skies over Poland.

the unit also operated other versions of the *Foxbat*, which facilitated operations.

The 4th VA's reconnaissance assets included the Yak-27R *Mangrove* which was operated by the 164th GvORAP at Brzeg. One of the unit's aircraft crashed in the mid-1960s after colliding with a drifting reconnaissance balloon near the town of Rademsk, killing the navigator and seriously injuring the pilot. Such balloons were launched *en masse* across the borders of the Warsaw Pact nations in those days. The cause of the accident came to light when traces of blue paint (of Western provenance, as chemical analysis showed) were found on the wreckage; the balloon's equipment container was painted blue for low visibility and the Yak crew never saw it.

Later, the *Mangrove* was superseded by the MiG-21R; the type was operated by the 159th GvIAP at Kłuczewo (39 examples in

The 4th Air Army's order of battle in 1990

Unit	Base	Aircraft	Fleet	Notes
Direct reporting units				
164th *Kerchenskiy* GvORAP	Krzywa AB	Su-24MR	12	Withdrawn 1-8-90
		MiG-25RBF	2	
		MiG-25RBS	2	
		MiG-25RBSh	2	
		MiG-25RBT	2	
		MiG-25BM	?	
		MiG-25RU	2	
245th OSAE	Legnica AB	An-12BP	4	
		An-26	6	
		Mi-8T	1	
		Mi-8PS	3	
		Mi-8S	1	
239th *Baranovichskaya* Red Banner IAD, HQ Kłuczewo				
Command flight	Kłuczewo AB	An-2TD	1	
159th *Novorossiyskiy* GvIAP	Kłuczewo AB	Su-27	33	Awarded the Red Banner Order and Suvorov Order. Moved to Petrozavodsk-Besovets
		Su-27UB	6	
582nd IAP	Chójna AB	Su-27	29	
		Su-27UB	6	
149th BAD, HQ Szprotawa				
Command flight	Szprotawa AB	An-2TD	1	
		Mi-9	1	
3rd BAP	Krzywa AB	Su-24 Fencer-B	30	
42nd *Tannenbergskiy* GvBAP	Żagań AB	Su-24M	25	
89th BAP	Szprotawa AB	Su-24M	24	

The crew of 159th IAP Su-27UB '63 Red' straps in before a flight.

1968 and 26 MiG-21Rs serving alongside MiG-21SMs from 1970) and by the 151st ORAE, which was based at Brzeg AB from 1960. The Yak-28R *Brewer-D* saw service with the 164th GvORAP in 1967-85; later the unit re-equipped with the Su-24MR.

The Yak-28PP *Brewer-E* ECM aircraft was operated by the 151st OAPREB (*ot**del'**nyy **a**vi**apolk rah**dioelek**tron**noy bor'byy* – independent ECM regiment) at Brzeg AB. This unit was established in August 1984 by reorganising the former 151st ORAE. In 1989 the 151st OAPREB returned to the Soviet Union, redeploying to Shchoochin, Belorussia.

The Army Aviation component of the SGV included at least two independent helicopter regiments. One was a transport helicopter unit (possibly the 688th OVP) at Legnica AB equipped with Mi-4s and Mi-6s which was heavily involved in Operation *Dunai*, airlifting Soviet troops to Prague-Ruzyne airport on the night of 21st August 1968 during the first wave of the airborne assault. The regiment stayed in Czechoslovakia for more than a year. During this period the Mi-6s were used very actively for delivering various kinds of military materiel, ammunition, foodstuffs and sometimes even armoured personnel carriers. Incidentally, the invasion of Czechoslovakia was the first combat operation in which the Soviet Air Force Mi-6s took part. Later the Mi-4s were replaced by Mi-8Ts while the Mi-6s served on.

The only other unit identified to date is the 55th *Sevastopol'skiy* OBVP, which was hastily redeployed in full strength from Brody (near L'vov, the Ukraine) to Brzeg AB in April 1981 when political tensions mounted in Poland and the Soviet Union took measures to nip a possible anti-communist uprising in the bud. The unit was equipped with Mi-8 transport/assault helicopters and Mi-24 assault helicopters. In 1985 the regiment's Sqn 2 redeployed to the Afghan theatre of operations where heliborne support was needed badly. In June 1989 the 55th OBVP moved to Legnica; however, after the abovementioned incident with the runaway MiG-23, the 55th OBVP redeployed again to the former base of the 871st IAP (Bagicz AB), the latter unit moving to Brzeg.

As of 1990 the 55th OBVP had 42 Mi-24Vs and 22 Mi-8s on strength. On 5th May 1992 the unit departed to Russia.

Su-27 '06 Red' from the same unit shows obvious signs of recoding, having previously served with another regiment.

The Central Group of Forces/59th Air Army order of battle in 1949-55

Unit	Base	Notes
Direct reporting units		
201st OTAO (?)	Bad Vöslau, Austria	
93rd GvORAP (?)	Bad Vöslau	
4th L'vovskiy GvBAK (HQ Aspern, Austria)		HQ to Debrecen, Hungary, 6-52; disbanded 195...*
164th GvBAD (HQ Aspern, Austria)		Withdrawn to Melitopol', the Ukraine, 7-55
654th *Berlinskiy* GvBAP	Aspern	Withdrawn to Melitopol' 7-55
748th *Krakovskiy* GvBAP	Zwölfaxing, Austria	
819th GvBAP	Aspern	Withdrawn to Melitopol' 7-55
8th GvBAD (HQ Strasshof, Austria)		HQ to Debrecen, Hungary, 6-52
674th *Vislenskiy* GvBAP	Strasshof	To Debrecen 6-52
727th *Cherkasskiy* GvBAP	Götzendorf, Austria	To Debrecen 6-52
880th *Vislenskiy* GvBAP	Tököl, Hungary	
6th GvIAK (HQ Bad Vöslau, Austria)		HQ to Wiener Neustadt, Austria, 1949; disbanded in the 1950s*
9th GvIAD (HQ Wiener Neustadt, Austria)		Replaced by another fighter division
689th *Sandomirskiy* GvIAP	Strasshof	To Pápa, Hungary; then back to Strasshof 1952. Withdrawn to Nivenskoye
100th GvIAP	Wiener Neustadt	
...th GvIAP	Parndorf, Austria	To Wiener Neustadt 1951
195th GvIAD (HQ Pápa, Hungary)		
1st GvIAP	Veszprém	
5th *Berlinskiy* GvIAP	Pápa	
515th *Pomeranskiy* IAP	Tököl	
330th IAD (HQ Kecskemét, Hungary, 3-52)		Moved to Strasshof, Austria, 20-11-52
116th IAP	Taszár, Hungary	Moved to Aspern 15-10-52
927th IAP	Kecskemét, Hungary	Moved to Strasshof 20-11-52

* the divisions were placed under direct 59th VA control

Central Group of Forces (old) and Southern Group of Forces, Hungary

Over the years, two Soviet military contingents abroad bore the name Southern Group of Forces (YuGV – ***Yoozh**naya* ***groop**pa voysk*). The first of these existed in the immediate post-war years and was based in Bulgaria and Romania in 1945-47. The second, which is described here, was formed pursuant to a Soviet-Hungarian treaty signed on 28th May 1957 to redefine the legal status of the Soviet troops stationed in Hungary after the war; these troops had been part of the first Central Group of Forces (Austria and Hungary) which was disbanded in 1955 after the Soviet pullout from Austria. The order of battle of the Central Group of Forces' aviation component (the 59th VA headquartered at Vienna-Liesing) in 1949-55 is described in the table above.

Between 1955 and 1957 the Soviet units remaining in Hungary were part of the provisional Special Corps (OK – *O**sob**yy **kor**pus*).

The 'new' YuGV was headquartered in Budapest (Mátyásföld area) and established from most of the units that had participated in Operation *Vikhr'* (Whirlwind) – the suppression of the Hungarian anti-communist uprising in November 1956. Its Air Force component was still known as the 59th VA (the number was inherited from the 'old' Central Group of Forces); its order of battle in the late 1950s/early 1960s was reportedly as described in the table overleaf.

The Southern Group of Forces periodically held combined-arms exercises. One such exercise took place on 21st-27th June 1965, involving the 1st GvAPIB, 727th GvOBAP, 195th GvIAD, 97th GvORAE and 315th ORAE, as well as Tupolev Tu-16 *Badger* heavy bombers not based in Hungary. The exercise had a nuclear scenario, and the 1st GvAPIB (with Su-7BMs) and 727th GvOBAP (with IL-28Ns) made simulated strikes with two 200-kiloton nuclear bombs each against the simulated adversary, which in a real-life scenario would have been Italian troops – specifically, the 'Ariete' and 'Centauro' armoured divisions.

The Southern Group of Forces/59th (36th) Air Army order of battle in the late 1950s./early 1960s

Unit	Base	Aircraft	Notes
Direct reporting units			
1st GvIBAP	Kunmadaras	Su-7B/BM	
		Su-7U	From 1963
727th *Cherkasskiy* GvOBAP	Debrecen	IL-28	
		IL-28U	Ex-727th GvBAP, since 1960
93rd GvORAP			Withdrawn 1960
328th *Vislenskiy* GvORAP	Kunmadaras	IL-28R	
		IL-28U	
97th GvORAE	Debrecen	IL-28R	
		IL-28U	
		MiG-15R*bis*	Ex-674th GvBAP. Merged into 328th GvORAP 9-77
315th GvORAE	Kunmadaras	MiG-15R*bis*	
		UTI-MiG-15	Ex-880th GvBAP. Merged into 328th GvORAP 9-77
239th GvVTAP	Debrecen	Li-2	Withdrawn to East Germany 11-59 and superseded by, see next line
396th *Stalingradskiy* GvVTAP	Kalocsa-Foktö	An-2	
		Li-2	
		Mi-4	Became a helicopter unit (396th GvOVP) in 1961 with Mi-4s and Mi-6s
201st *Stalingradskaya* OSAE	Tököl		
OAZBVM*	Kunmadaras	IL-28BM	
		IL-28U	
195th *Dnepropetrovskaya* GvIAD, HQ Pápa			HQ to Tököl in 1957
1st GvIAP	Kunmadaras		Awarded the Red Banner Order. To direct 59th VA command as 1st GvIBAP 1963
5th *Berlinskiy* GvIAP	Pápa		Moved to Sármellek in 1960
14th *Leningradskiy* GvIAP	Kiskunlacháza		Transferred from 275th IAD 8-60
515th *Pomeranskiy* IAP	Veszprém		Moved to Tököl in 1960
275th GvIAD, HQ Kiskunlacháza			Withdrawn 8-60
14th *Leningradskiy* GvIAP	Kalocsa		Transferred to 195th GvIAD 27-6-60
Unknown IAP	Kiskunlacháza		Withdrawn 8-60
Unknown IAP	Szolnok		Withdrawn ?-60
177th *Cherkasskaya* GvBAD, HQ Debrecen			Disbanded 1960
674th *Vislenskiy* GvBAP	Debrecen	IL-28	Transformed to 97th GvORAE 1960
727th *Cherkasskiy* GvBAP	Debrecen	IL-28	To direct 59th VA command as 727th GvOBAP
880th *Vislenskiy* GvBAP	Kunmadaras	IL-28	Transformed to 315th GvORAE 1960

Notes: OAZBVM = *ot**del'**noye aviazve**no** booksi**rov**shchikov voz**doosh**nykh mi**shen**ey* – independent target-towing flight. The appellation of the 177th *Cher**kas**skaya* GvBAD and 727th *Cher**kas**skiy* GvBAP was given for liberating the Ukrainian city of Cherkassy in the Great Patriotic War; the 195th *Dnepropet**rov**skaya* GvIAD was thus named for its part in liberating the city of Dnepropetrovsk, also in the Ukraine. The 14th *Lenin**grad**skiy* GvIAP earned its name for its part in defending the besieged Leningrad. The 328th GvORAP, 674th GvBAP and 880th GvBAP got the appellation ***Vis**lenskiy* for their part in the liberation of Poland when the Soviet troops crossed the Wiśła River. The 515th *Pome**ran**skiy* IAP fought with distinction in Pomerania, Germany, in the closing stage of the war.

In 1968 the Soviet Air Force contingent in Hungary was redesignated as the 36th VA; concurrently the 195th Guards Fighter Division was redesignated the 11th GvIAD, retaining its Guards status and awards. In the 1980s the 36th VA's order of battle was as shown in the table on the following page.

In August 1968 the 36th VA saw real action when the 5th GvIAP, 1st GvIBAP, 727th GvOBAP, 396th GvOVP, 97th GvORAE and 315th ORAE participated in Operation Dunai (the invasion of Czechoslovakia). The operation involved 177 of the Air Army's 286 aircraft current at the time. Like the other WarPac aircraft involved, the machines wore twin red 'invasion stripes' on the fuselage.

The fighter units of the 'old' TsGV/'new' YuGV (59th/36th VA) started out by operating the MiG-15 and MiG-15*bis*, which saw service with the 1st GvIAP, 5th GvIAP, 116th IAP, 515th IAP and 927th IAP of the 'old' Central Group of Forces. 62 *Fagots* were transferred to

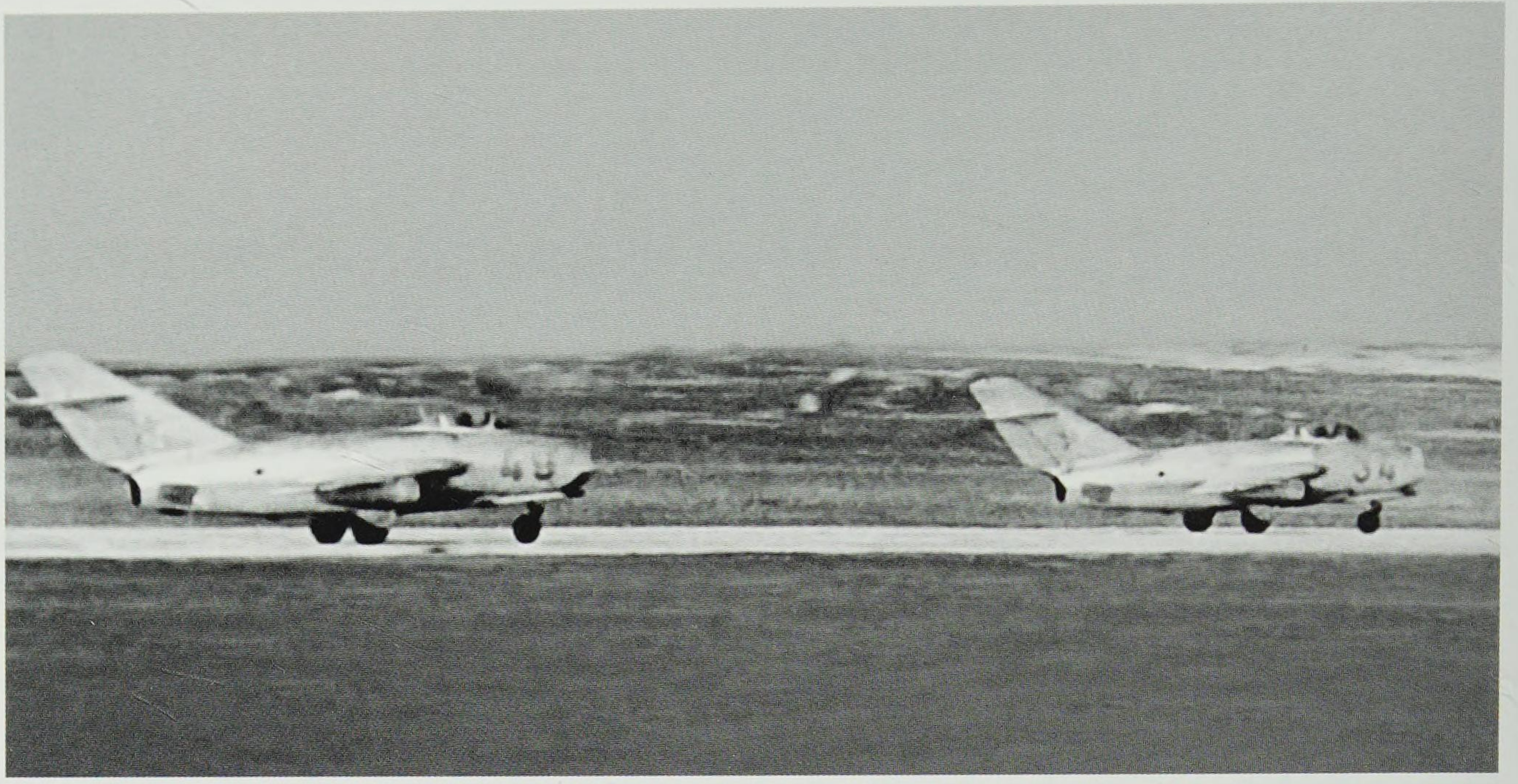
The Southern Group of Forces/36th Air Army order of battle in the 1980s

Unit	Base	Aircraft	Fleet	Notes
Direct reporting units				
1st *Krasnogvargeyskiy* GvAPIB	Kunmadaras	MiG-27D	34	Named after the 50th Anniversary of the USSR;
		MiG-23UB	15	awarded two Lenin Orders and the Kutuzov Order
88th *Novorossiysko-Krakovskiy* GvAPIB	Debrecen	MiG-27D	45	Awarded the Bogdan Khmel'nitskiy Order.
		MiG-23UB	18	Arrived 6-87; withdrawn 18-5-90
727th *Cherkasskiy* GvBAP	Debrecen	Su-24/Su-24M	33	Withdrawn to Kirovograd 10-7-87
328th *Vislenskiy* GvORAP	Kunmadaras	Su-17M4R	12	
		Su-17UM3	3	
		Su-24MR	13	
396th *Stalingradskiy* GvOVP	Kalocsa	Mi-6A (Sqns 3/4)	24	Unit withdrawn 6-7-90
		Mi-8T/TV (Sqns 1/2)	40*	*Proportion unknown
		Mi-8VZPU	1	
201st *Stalingradskaya* OSAE	Tököl	An-12	5	
		An-26	5	
		Mi-2	6	
		Mi-8T	6	
		Mi-8PS	4	10 codes reported!
		Mi-8VZPU	1	
		Mi-9	1	
		Tu-134AK	1	Later Tu-134 'Balkany'
209th OVE REB	Debrecen	Mi-8PP	6	Arrived 1975; withdrawn 2-90
		Mi-8SMV	6	
		Mi-9	2	
		Mi-8TL	1	
8th OBMAE	Sármellek	IL-28BM	3	To Kunmadaras and Debrecen in 1979. Withdrawn 1984
		IL-28U	1	
11th *Dnepropetrovskaya* Red Banner GvIAD, HQ Tököl				
Command flight	Tököl	An-14A	1	
		Mi-9	1	
5th *Berlinskiy* GvIAP	Sármellek	MiG-23M	24	Awarded the Red Banner and Bogdan Khmel'nitskiy Orders
		MiG-23UB	4	
		MiG-29 (*izdeliye* 9.13)	19	
		MiG-29UB	1	
14th *Leningradskiy* GvIAP	Kiskunlacháza	MiG-23UB	8	Withdrawn to Zherdyovka AB, Kursk, Russia, 22-4-91
		MiG-29 (*izdeliye* 9.13)	34	
		MiG-29UB	2	
515th *Pomeranskiy* IAP	Tököl	MiG-29 (*izdeliye* 9.13)	48	Awarded the Bogdan Khmel'nitskiy Order. Disbanded in July-
		MiG-29UB	6	August 1989, all aircraft to the 5th GvIAP

the Hungarian Air Force from the 1st GvIAP, 5th GvIAP and 515th IAP in 1951; so were the 31 MiG-15s of the 116th IAP when the regiment moved to a new TsGV base in Austria in 1952.

The *Fagot* was superseded by the MiG-17F day fighter and the all-weather MiG-17PF interceptor; the latter type arrived on Hungarian soil with the 14th GvIAP, which moved from Estonia to Kalocsa AB on 21st August 1957. In 1963 the 195th GvIAD had 40 *Fresco-Cs* and ten *Fresco-Ds*. Almost concurrently, the supersonic MiG-19S day fighter and the all-weather MiG-19P interceptor were fielded by the 59th VA; 20 examples of both versions were operated by the 195th GvIAD in 1963, including ten in the 14th GvIAP.

Later, various versions of the MiG-21 served with the Southern Group of Forces. The 14th GvIAP took delivery of the first MiG-21Fs in 1960, when it was still part of the 275th IAD and based at Kalocsa; by 1962, the regiment had ten MiG-21F-13 fighters (half the number in the 195th GvIAD), and in 1965 the number of *Fishbeds* in the division had increased to 121. The MiG-21PF came next; in 1968 there were five of them in the 11th GvIAD command flight, 38 in the 5th GvIAP,



A pair of Southern Group of Forces/ 1st GvIAP MiG-15*bis* fighters ready to take off at Veszprém AB.

35 in the 14th GvIAP (which re-equipped in 1965) and 33 in the 515th IAP. The next version operated by the 11th GvIAD was the MiG-21PFM introduced in 1970; it is known that two 515th IAP *Fishbed-Fs* collided over Csákvár AB in 1972. The MiG-21SM was introduced in 1972. The 515th IAP operated MiG-21*bis* fighters in the mid-1980s. Additionally, each MiG-21 unit, including the 315th ORAE reconnaissance squadron, had about three MiG-21U trainers.

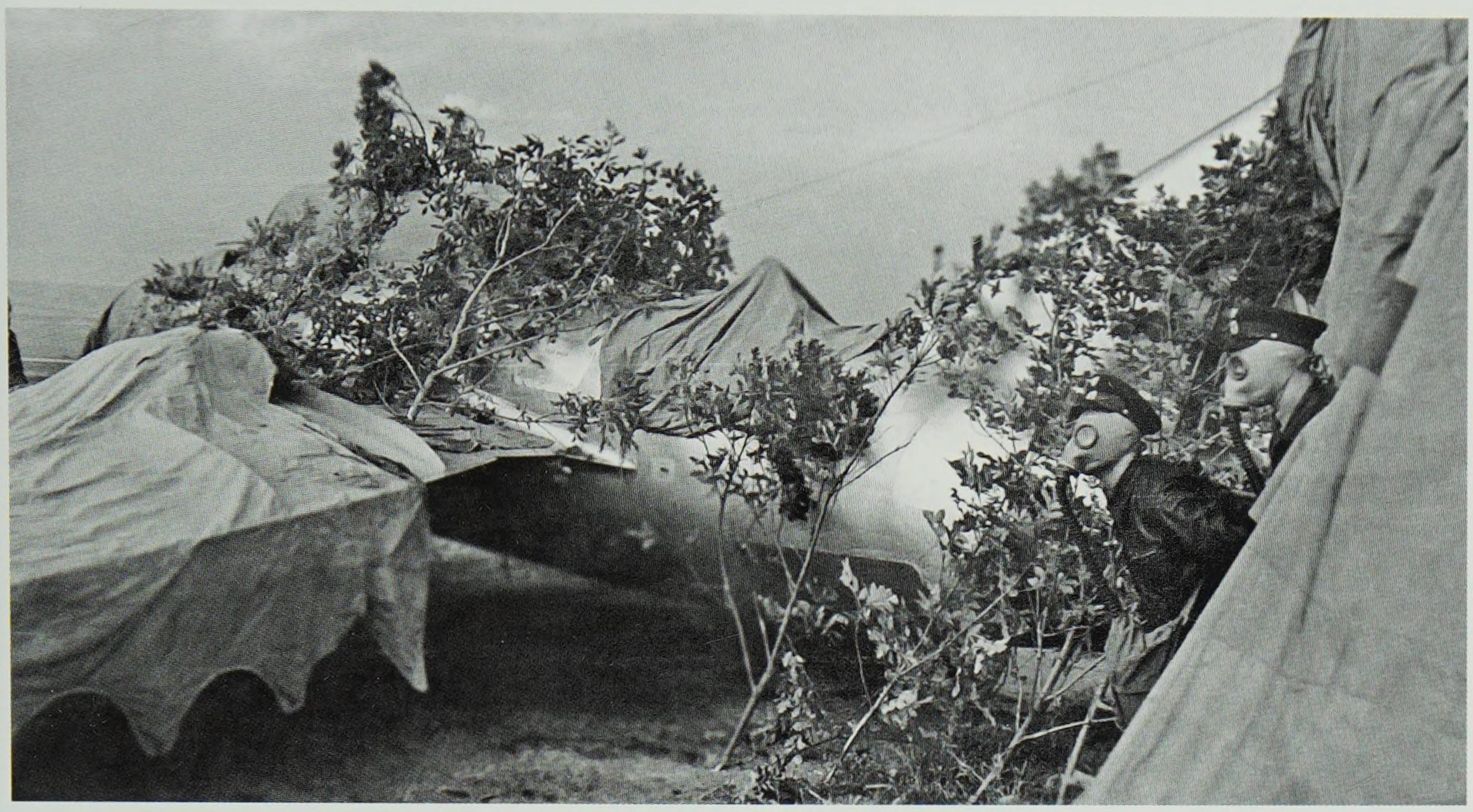
The MiG-23M entered service with the YuGV in 1975. Again, the 14th GvIAP led the way; the 5th GvIAP followed suit in 1976. That year the aircraft of the 14th GvIAP/Squadron 2 were assigned to carry tactical nuclear bombs, augmenting the fighter-bombers and tactical bombers of the 36th VA. In 1987-89 the 515th IAP at Tököl temporarily used the MiG-23Ms of the 5th GvIAP, as well as four of its MiG-23UBs. The *Flogger-C* was replaced in the 14th GvIAP by the MiG-23ML from 1979 onwards (37 examples were on strength) and by the MiG-23MLD in 1985.

Another *Fagot-B* from the same unit is manhandled on the flight line.

The two-seat MiG-23UB saw service both with the units flying the MiG-23M/ML/MLD (even after they re-equipped with the MiG-29) and with the fighter-bomber regiment flying MiG-27Ds. the 14th GvIAP had 12 *Flogger-Bs* on strength, while the 88th GvAPIB at Debrecen had an unusually large number of the trainers (18). Unfortunately accident attrition among the MiG-23s was fairly high; two 14th GvIAP MiG-23UBs crashed on 9th January 1984 and 6th May 1986 (in the former case the trainee was killed), while on 24th March 1986 two MiG-23MLs collided in mid-air, killing one of the pilots.

When it came to re-equipping with the MiG-29, the 14th GvIAP led the way again. After the unit's pilots had taken their training at the Lipetsk centre, the first five *Fulcrum-Cs* arrived at Kiskunlacháza on 15th August 1986. 30 single-seaters were delivered before the end of the year. However, the MiG-29UB trainers arrived late, and the pilots had to make do with MiG-23UBs for proficiency training until 1989. In 1987-88 the aircraft of the 14th GvIAP temporarily redeployed to Tököl and Mezökövesd while Kiskunlacháza AB was being reconstructed.

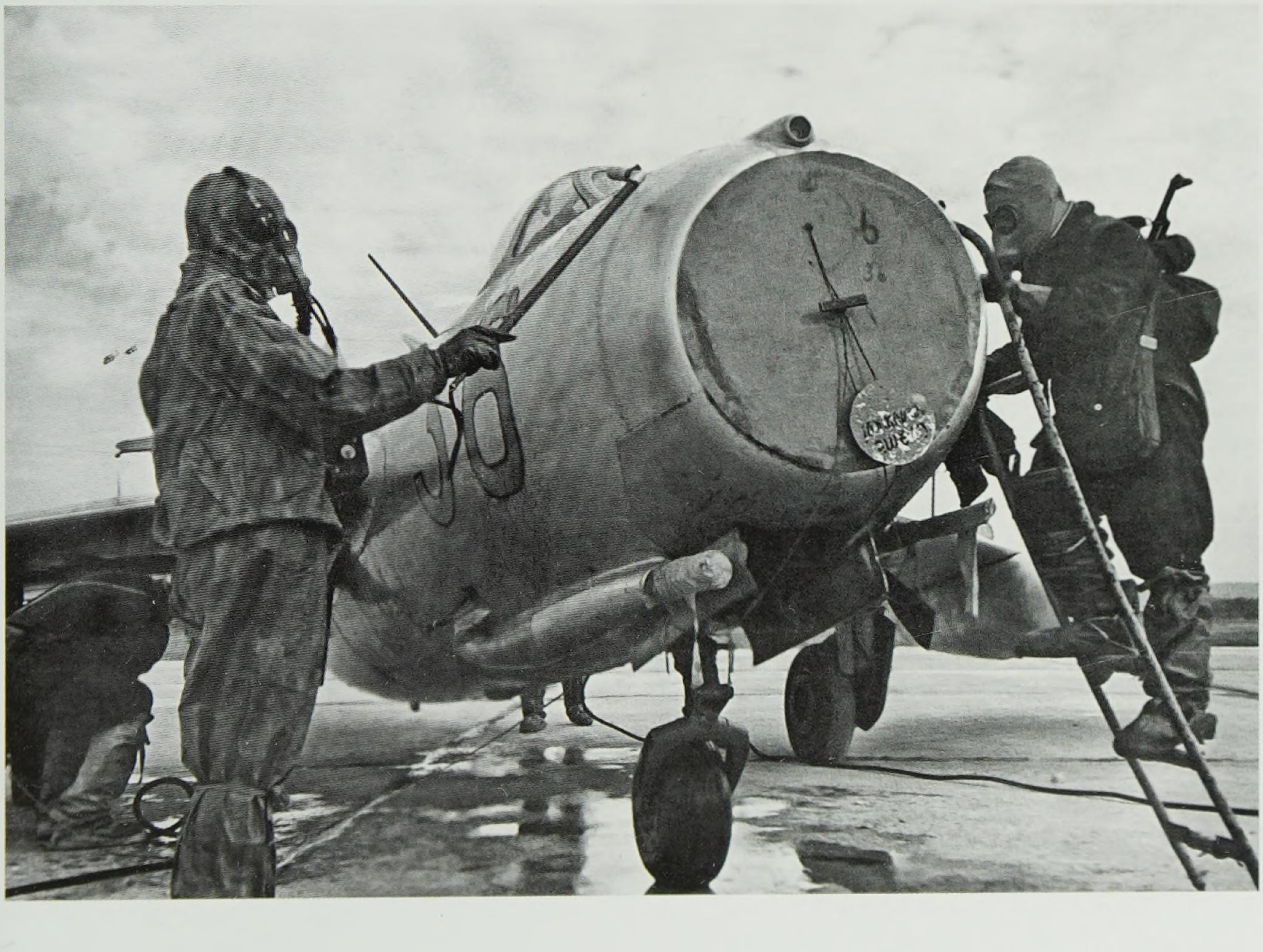
The 515th IAP at Tököl likewise converted to the MiG-29 in 1986. The 5th GvIAP started to re-equip with *Fulcrums* in 1987; before receiving its own MiG-29s in 1989, the unit swapped aircraft and ground personnel with the 515th IAP to facilitate the transition to the *Fulcrum*. (Actually the 5th GvIAP took over the 'loaned' jets when the 515th IAP disbanded in July-August 1989.)



A 1st GvIAP MiG-15*bis* hastily camouflaged with branches and tarpaulins during an NBC exercise (note that the personnel are wearing gas masks).

36th VA MiG-29s took part in live weapons exercises; in five such exercises the pilots of the 14th GvIAP destroyed eight Lavochkin La-17 target drones, ranking second in the Southern Group of Forces as far as combat readiness levels were concerned. Additionally, sometimes the Soviet MiG-29s acted as practice targets for Hungarian fighters during intercept training sessions. Interestingly, during the 'pre-*Fulcrum* era' the NATO fighters often 'played tag' with the Soviet jets stationed in Hungary, latching onto the MiG-23's tail with no trouble at all. When MiG-29 came on the scene, the tables were turned and the NATO airmen quickly gave up these games!

The fighter-bombers were represented initially by the MiG-17, which saw service with the 1st GvIBAP right up until 1975 (albeit only with Sqn 3 at that time). In late 1961 the unit had begun re-equipping with the Su-7B; three Su-7U trainers were also delivered. In 1965 these were augmented by the improved Su-7BMs; by 1968 the unit had 31 single-seaters and four trainers. The *Fitters* participated in the invasion of Czechoslovakia, redeploying to Náměšt' nad Oslavou AB



Personnel in full NBC clothing 'deactivate' a 1st GvIAP MiG-15*bis* after a simulated nuclear strike.

515th IAP pilots use their hands to emulate aircraft when ground-practicing formation manoeuvres beside MiG-21*bis* '07 White outline'.

which hosted the Czechoslovak Air Force's 20th Fighter-Bomber Regiment. The 1st GvIBAP remained there until 22nd October 1968; then, satisfied that obedience had been restored, the Soviet Union withdrew the invasion task force and the unit returned to its home base at Kunmadaras.

In September 1976 the unit (now called the 1st GvAPIB) began re-equipping with the 'swing-wing' Su-17M2. Later, instead of converting to later versions of the *Fitter*, the 1st GvAPIB switched allegiance to Mikoyan, re-equipping with the MiG-27D fighter-bomber which it operated until the withdrawal. The MiG-27D also served with the 88th GvAPIB that was stationed at Debrecen in 1987-90.

From 1952 the bomber element of the 59th VA/36th VA consisted of IL-28 tactical bombers, some of which were nuclear-capable IL-28Ns. In particular, after the disbandment of the 177th GvBAD the 727th GvOBAP had 33 *Beagles*, including ten IL-28Ns, and three IL-28U *Mascot* trainers. IL-28 operations in Hungary were not accident-free; in particular, one *Beagle* crashed fatally at Debrecen on 23rd December 1954 and another on 2nd September 1955. Two more were involved in a mid-air collision in 1969.

In 1969-70 the 727th GvOBAP re-equipped with Yak-28 bombers and Yak-28U trainers. These remained in service until 1982 when the unit began converting to the Su-24 tactical bomber; the first *Fencer-Bs* arrived at Debrecen on 21st February. In 1983 they were augmented by Su-24Ms; one of these crashed in April 1984 near Nagyhegyes.

The reconnaissance assets of the 59th VA (and subsequently the 36th VA) originally consisted of IL-28R and IL-28RR twinjets, which saw service with the 328th GvORAP and 97th GvORAE, and of MiG-15R*bis* fighters operated by the 315th ORAE. Also, about 15 Yak-25RV high-altitude recce aircraft were deployed at Kiskunlacháza. In due course they gave way to supersonic jets: in 1967 the 97th GvORAE received nine Yak-28R supersonic PHOTINT aircraft and the 315th ORAE had 11 MiG-21Rs in 1968. They stayed in service until the early 1980s. Then the *Brewer-Ds* gave way to Su-17M4R *Fitter-K* reconnaissance aircraft, which could also fulfil a strike role if necessary, and the specialised Su-24MR ELINT aircraft. In the spring, summer and autumn of 1983 the 328th GvORAP temporarily moved from Kunmadaras to Debrecen while major runway resurfacing work was taking place at the home base.

In addition to spyplanes, the 97th GvORAE also operated the Yak-28PP ECM aircraft. Three such aircraft were delivered in 1972.

Transport duties were fulfilled by a mix of types. In particular, the 201st OTAO (later the 201st OSAE) operated Li-2 (up to 1954), IL-12T and IL-14T transports, as well as IL-14S VIP aircraft, from Bad Vöslau in the late 1940s/1950s. One of the IL-14s was outfitted for navaids calibration. Five An-12BPs saw service with the 201st OSAE. In the 1970s/1980s the unit took delivery of three ordinary transport An-26s and one An-26KPA flight checker. In 1981 the 201st OSAE received a Tu-134AK VIP jet; after 1986 it was replaced by another example converted to Tu-134 'Balkany' ABCP standard.

For liaison duties the 11th GvIAD command flight had a single An-14A light transport aircraft. Later, An-2 biplanes were used in this role

Training assets included a target towing flight which initially operated Douglas A-20 Havocs. In 1953 it re-equipped with IL-28BM target tugs, plus a few IL-28Us.

The 59th VA/36th VA also operated various rotary-wing types. Transport duties were performed by Mi-4 medium helicopters (from 4th November 1956) and Mi-6 heavy-lift helicopters of the 396th GvOVP. In August 1968 this unit took part in the invasion of Czechoslovakia, redeploying in full strength (26 Mi-4s and 12 Mi-6s) from Kalocsa to Bratislava-Ivanka airport where it stayed until 3rd September. During this period the Mi-6s were used very actively for delivering personnel of the 254th Motor Rifle Division, military materiel, ammunition, foodstuffs and sometimes even armoured personnel carriers. Staff transport duties were performed by five 201st OSAE Mi-4S machines.

The Mi-8T replaced the Mi-4 in the 36th VA in 1972 and saw service with several units, including the 396th GvOVP, 201st OSAE and the ECM squadron (209th OVE REB). The 396th GvOVP also operated the armed Mi-8TV transport/assault helicopter. The Mi-8PS VIP version was operated by the 201st OSAE.

A single Mi-10 served with the 396th GvOVP in 1964-78; possibly it was a Mi-10PP ECM version with an external jammer pod. For liaison duties the 201st OSAE used five Mi-1 helicopters from 1956 to 1970.

ECM duties were initially fulfilled by the Mi-4PP which saw service with the Air Force's 209th OVE REB; it was later replaced by the Mi-8PP and Mi-8SMV ECM helicopters. The Mi-8VZPU command post version was on strength with the 396th GvOVP, while the later Mi-9 command post saw service with the 11th Fighter Division command and the 209th OVE REB.

Army Aviation units assigned to the Southern Group of Forces included the 488th OVPBU (*ot**del'**nyy verto**lyot**nyy polk boye**vo**vo oopravl**en**iya* – Independent Combat Command Helicopter Regiment) based at Tököl and several independent helicopter squadrons and detachments (unfortunately no numbers are known). The 13th GvTD (*Gvar**dey**skaya **tah**nkovaya di**vee**ziya* – Guards tank division) had a helicopter detachment based at Veszprém, the 19th GvTD kept a similar detachment at Esztergom-Kertváros; the 93rd GvMSD (*Gvar**dey**skaya motostrel**ko**vaya di**vee**ziya* – Guards Motor Rifle Division) had a combat helicopter squadron based at Kecskemet-Kadafalva from 1967 and the 254th MSD included a combat helicopter squadron at Szekesfehérvár-Sóstó.

Initially the Army Aviation units operated the Mi-4 (for instance in the 93rd GvMSD); 23 were in service in 1967-69. In the 1970s they were replaced by the Mi-8T and Mi-8TV. In 1976 the 93rd GvMSD introduced the Mi-24D *Hind-D* attack helicopter, which was followed/replaced by the Mi-24V in 1978 and the Mi-24P in 1982. The Mi-24K photo reconnaissance/artillery spotter version and the Mi-24R NBC reconnaissance version were added in 1986. Liaison duties were performed by Mi-2s since 1975.

In the late 1980s the Soviet Army began its withdrawal from Hungary in line with the political changes in both countries. The 13th GvTD pulled out by June 1989; the 254th MSD followed in November 1990 and the 93rd GvMSD in early 1991. On 27th June 1991 the Southern Group of Forces officially disbanded.

1st GvAPIB personnel in full parade dress lined up with the unit banner on 9th May 1975 to celebrate V-Day.

A 1st GvAPIB pilot in the cockpit of his Su-17M2 at Kunmadaras AB.

Central Group of Forces (new), Czechoslovakia

The second Central Group of Forces (TsGV – *Tsen***trahl'***naya* ***groop****pa voysk*) was established in 1968 – this time in Czechoslovakia after the suppression of the uprising, when the Soviet government decided it made sense to keep troops there for good measure. Another reason was that Czechoslovakia, like East Germany, was at the forefront of the Cold War, bordering on West Germany and Austria.

On 16th October 1968 the Soviet and Czechoslovak governments signed a treaty governing the temporary deployment of Soviet troops in Czechoslovakia; in keeping with this treaty the greater part of the WarPac intervention forces would be withdrawn (this process was completed in November 1968) but a Soviet contingent would remain in order to 'safeguard the socialist commonwealth'. Thus was born the Central Group of Forces headquartered in Prague.

Due to the limited territory of Czechoslovakia the 'new' TsGV was the most compact of the Soviet contingents in Eastern Europe, but nonetheless a fully capable one. Its Air Force component was not a full-size Air Army but the 131st *Novgo***rod***skaya* Red Banner SAD (***smesh****annaya* ***a****viadi***vee***ziya* – composite air division), thus named for its part in liberating the Russian city of Velikiy Novgorod.

The 131st SAD was headquartered at Mladá AB (also referred to as Boži Dar – 'Godsend') 40 km (25 miles) north-east of Prague and occupied four main airbases. Three of these were located in Czechia; these were Hradčany-Mimoň AB north of Prague, Mladá AB and Neředín AB in Olomouc in the east of the republic. The fourth base, Sliač AB (sometimes called Sliač-Hájniky) near Zvolen, was in central Slovakia. By 1989 the division had a personnel complement of some 6,000; the fleet comprised 105 combat aircraft, eight transport aircraft and 175 helicopters. The order of battle in late 1989 is described in the table on the following page.

The unit that was originally designated 159th IAP redeployed to Czechoslovakia from Cherlyany AB in the L'vov Region of the Ukraine (Carpathian Military District) on the first day of the invasion, 21st August 1968. Initially it was stationed at Košice-Barca air-

ГВАРДЕЙСКИЙ
КРАСНОГВАРДЕЙСКИЙ
АВИАПОЛК
ИМЕНИ 50 ЛЕТИЯ СССР
70
ЛЕТ

A badge commemorating the 70th birthday of the 1st GvAPIB.

1st GvAPIB pilots and their Su-17M2s at Pardubice, Czechoslovakia, where they redeployed for Exercise *Shchit-84*.

14th GvIAP command staff pose with one of the unit's *Fulcrum-Cs* at Kecskemet on 19th August 1990.

port, flying MiG-21s plus a few UTI-MiG-15 trainers; in October it redeployed to Zvolen (Sliač AB), and it was there that it received its new number. At the end of 1975 the unit (now the 114th IAP) redeployed to Mladá AB where it stayed until the final pullout. The unit was in the process of re-equipping with the MiG-29 when the decision to withdraw was taken; hence the 114th IAP received only ten *Fulcrums.* These equipped Sqn 1, operating alongside the 26 MiG-23MLDs in Squadrons 2 and 3.

The 192nd IAP at Hradčany-Mimoň AB likewise operated MiG-21s until it changed its specialisation. In addition, according to the recollections of former TsGV servicemen Hradčany also hosted an independent infantry support flight (*sic*) equipped with Mi-2 helicopters. This sounds strange, since, unlike Poland, the Soviet Union never operated armed versions of the *Hoplite*; the only support these helicopters could have rendered was liaison and search & rescue. Olomouc reportedly also hosted a similar but large unit (an infantry support detachment) equipped with Mi-2s.

One of the 100th ORAE's Su-17UM3 trainers crashed fatally at Zvolen when the landing gear failed to extend and the crew, in their attempts to extend it, circled until they ran out of fuel. The date of the accident is not known.

The helicopter regiment at Sliač AB had two squadrons of Mi-24s and one squadron of Mi-8s. In the 1970s Sliač was also home to a target towing flight equipped with IL-28BMs.

The An-12BPs of the 173rd OSAE had the normal Soviet Air Force grey livery but wore civil registrations for appearance's sake. In addition to their usual duties they were sometimes called upon to fly skydiving missions for the local paramilitary sports society Svazarm. Before the advent of the Tu-134AK jet the unit had operated an IL-14 and an An-24 in the VIP transport role. Again, Mladá AB reportedly also hosted an independent infantry support detachment with four to six Mi-2s, and at least one Mi-2 was operated in the liaison role by the 173rd OSAE.

In the late 1980s the Soviet leaders reassessed the 'Prague spring' (the political events in Czechoslovakia that had precipitated the invasion) and the invasion itself. In a joint statement by the state leaders of Bulgaria, Hungary, East Germany, Poland and the Soviet Union dated 4th December 1989, followed up by a similar statement of the Soviet government the following day, the signatories admitted that the Warsaw Pact intervention had been an unnecessary act. Hence in February 1990 the Soviet and Czechoslovak governments signed an agreement under which the Central Group of Forces was withdrawn by the

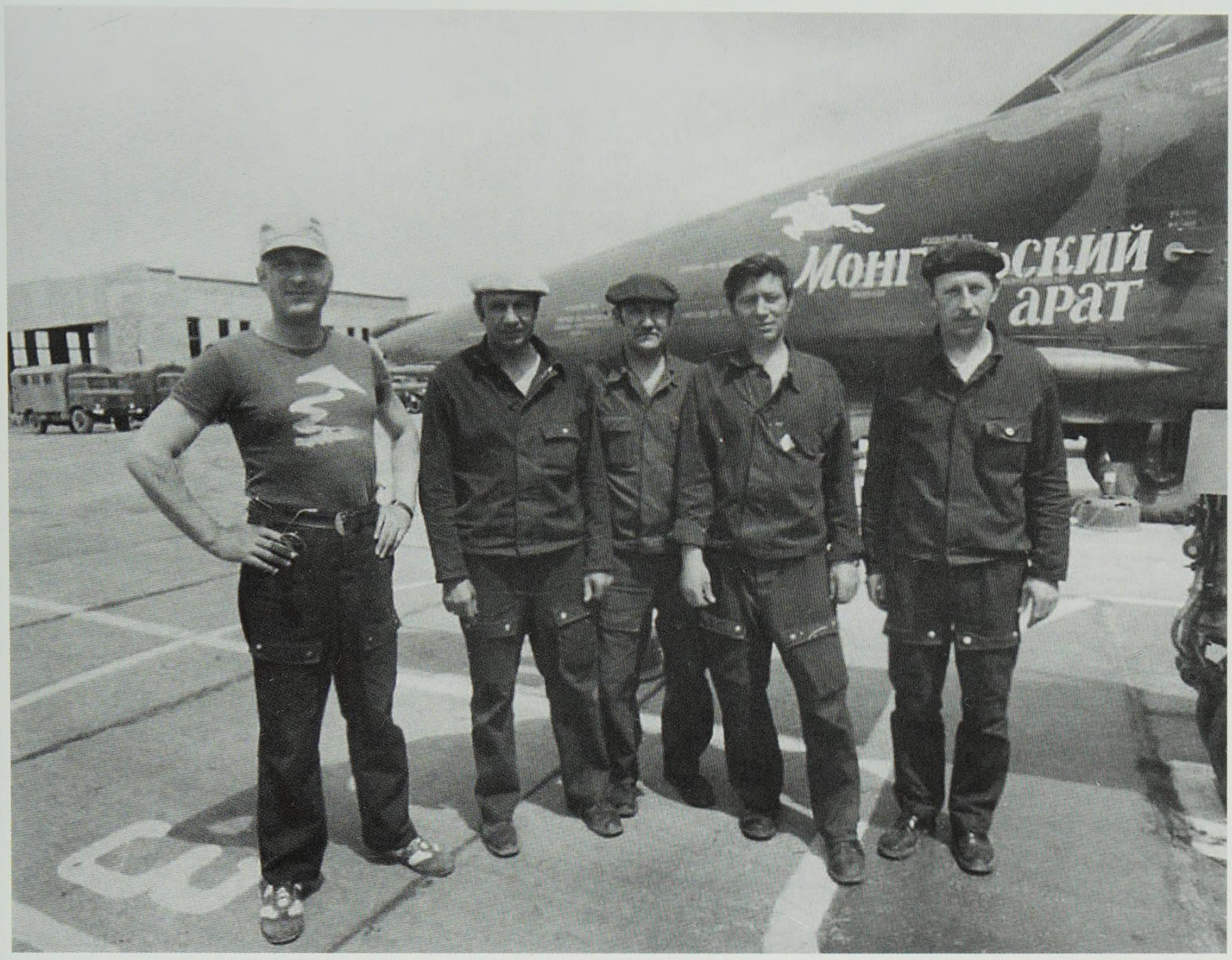
Central Group of Forces/131st SAD order of battle

Unit	Base	Aircraft	Fleet	Notes
114th *Tallinskiy* IAP	Mladá AB	MiG-23M (MLD?)	20	Formerly 159th *Tallinskiy* IAP, renumbered after 1972. Awarded the Red Banner Order
		MiG-23UB§	6	
		MiG-29 (*izdeliye* 9.12)	10	
		MiG-29UB	2	
173rd OSAE	Mladá AB	An-12BP	3	
		An-26	4	
		Mi-8T	4	
		Mi-8S	2	
		Tu-134AK	1	
231st OVE	Mladá AB	Mi-6VKP	2	
		Mi-6AYa (Mi-22)	1	
		Mi-8T/Mi-8TV	8	
		Mi-24V/Mi-24P	8	
		Mi-24R	2	
		Mi-24K	2	
236th APIB	Hradčany-Mimoň AB	MiG-27K	40	Formerly 192nd IAP, renumbered 1984; awarded the Kutuzov Order
		MiG-23UB	10	
230th OVE	Hradčany-Mimoň AB	Mi-8T/Mi-8TV	8	
		Mi-24V/Mi-24P	8	
		Mi-24R	2	
		Mi-24K	2	
199th OVE BU	Hradčany-Mimoň AB	Mi-6VKP	2	
		Mi-6AYa (Mi-22)	1	
		Mi-8T	3	
		Mi-8PPA	3	
		Mi-24R	2	
		Mi-24K	2	
490th OVP	Olomouc-Neředín AB	Mi-6VKP	1-2	Formerly 232nd OVE
		Mi-8T/TV/Mi-8MT	24	
		Mi-24V/Mi-24P	20	
		Mi-24R	2	
		Mi-24K	2	
100th ORAE	Sliač AB	Su-17M3R	17	Proportion unknown. Withdrawn in 1990
		Su-17UM3		
238th OVP	Sliač AB	Mi-8T/TV/Mi-8MT	20	
		Mi-24V/Mi-24P	36	
		Mi-24R	2	
		Mi-24K	2	

end of June 1991. After that, the 131st SAD was disbanded. The 114th IAP returned to the Carpathian MD to take up residence in Ivano-Frankovsk, where it subsequently became part of the Ukrainian Air Force. The 236th APIB disbanded, one squadron going to Daugavpils (Latvia, Baltic MD) and the other two to Olenegorsk. The 100th ORAE moved to Monchegorsk where it likewise disbanded. The 490th OVP moved to Tula-Klokovo AB (Moscow MD); the 238th OVP redeployed to a base near Orenburg and ultimately disbanded in 1998.

Group of Soviet Forces in Mongolia

Sino-Soviet relations were rather strained in the 1960s and 1970s; there was even an episode in March 1969 the Soviet Union and China clashed in a border skirmish when China attempted to seize the disputed Damanskiy and Kirkinskiy Islands on the Ussuri River. Hence in 1968-69 the Soviet Union began redeploying considerable military forces to the Chinese border. The units came from far and wide across the Soviet Union and included quite a few Air Force units.



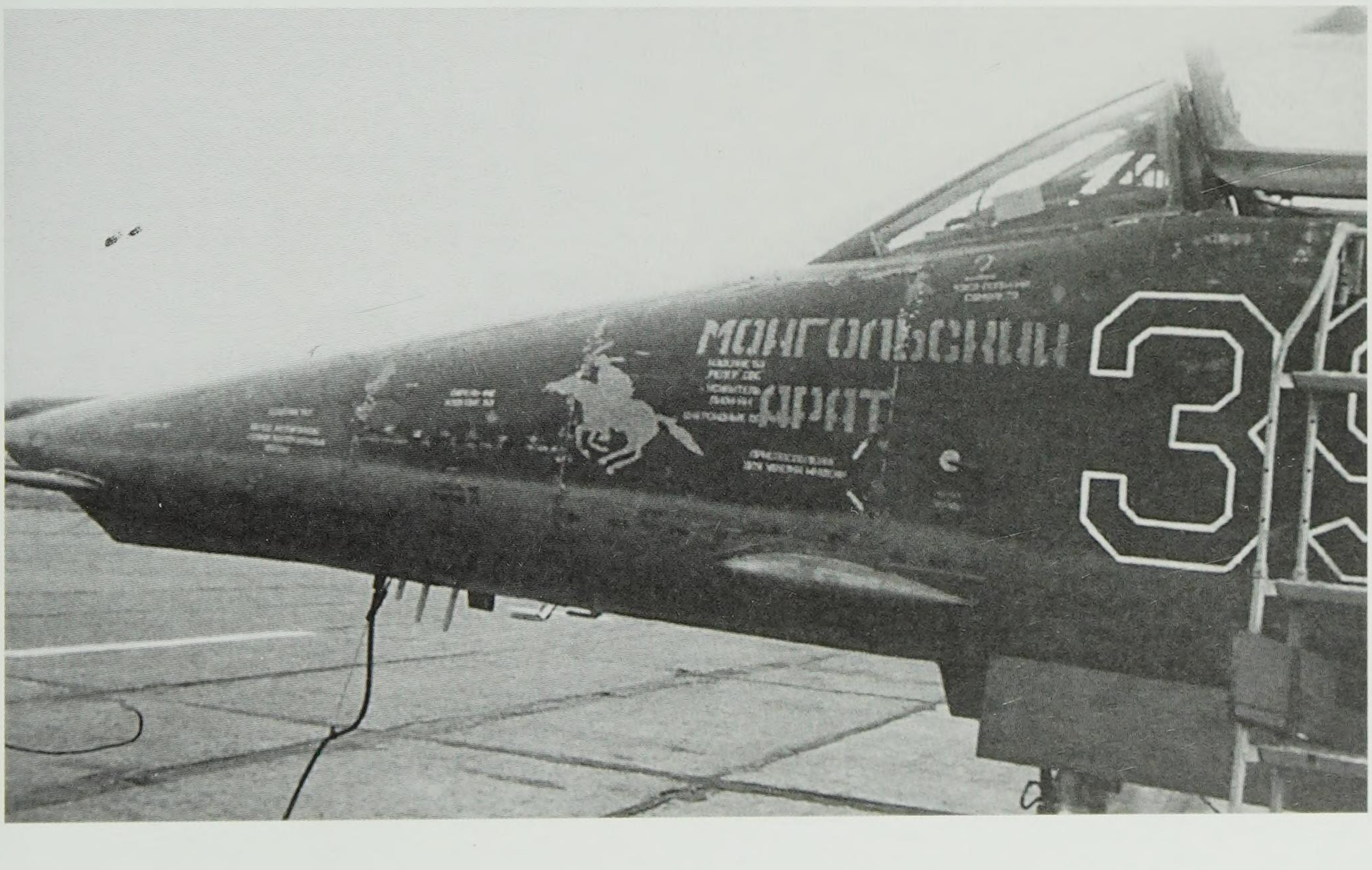
266th APIB technicians pose with one of the unit's MiG-27Ks upon return to the USSR; the aircraft bears the unit's name *Mongol'skiy arat*.

After the Sino-Soviet military incident the newly formed 39th Mechanised Army was deployed in neighbouring Mongolia, which was on friendly terms with Moscow. Also known as the Group of Soviet Forces in Mongolia (GSVM – ***Groop***_pa so_***vet***_skikh voysk v Mon_***gol***_ii_), it included the 44th SAK (***smesh***_annyy_ ***a***_via_***kor***_pus_ – Composite Air Corps) headquartered in Choibalsan. This was part of the 23rd Air Army headquartered in Chita in East Siberia (Transbaikalian MD).

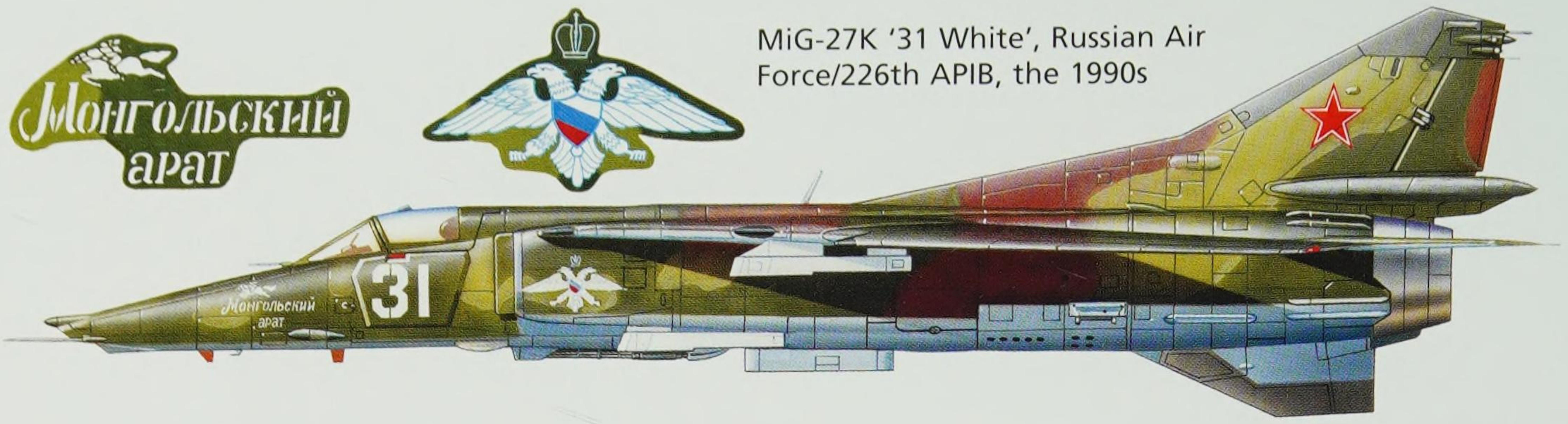
The 43rd IBAP was redeployed from Tukums, Latvia (Baltic MD) to Choibalsan, while the 266th IAP was transferred from the Ukrainian city of Ovruch (Zhitomir Region, Carpathian MD) to Nalaïh, 35 km (21.75 miles) east of Ulaanbaatar and became the 266th IBAP. Both units then flew MiG-17s;

В ПАМЯТЬ О СЛУЖБЕ
МНР

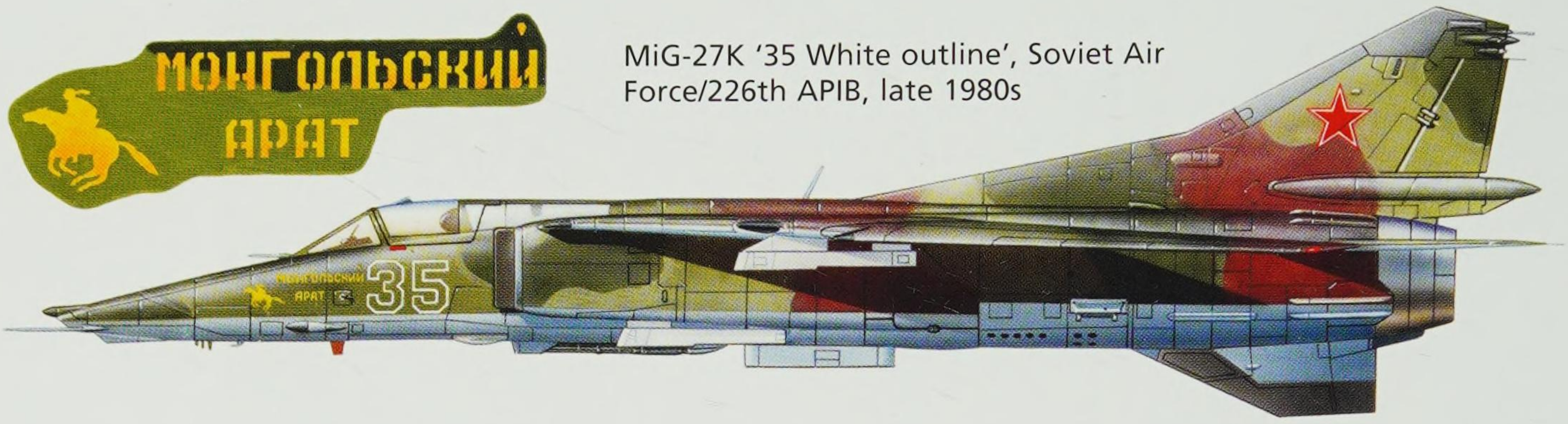
An enamel badge commemorating the Soviet deployment in Mongolia.



As this photo shows, different 266th APIB aircraft had the nose art applied differently.



MiG-27K ‘31 White’, Russian Air Force/226th APIB, the 1990s



MiG-27K ‘35 White outline’, Soviet Air Force/226th APIB, late 1980s

they came under the command of the new 29th IBAD headquartered at Ulaanbaatar. Choibalsan already had an airfield, while the airbase at Nalaïh was specially constructed in 1969. The Bayan-Djargalan target range was located near the latter base.

The 43rd APIB later converted to the Su-17 *sans suffixe*. In 1979 the *Fitter-Cs* gave place to Su-17M3s.

The 266th IBAP (later 266th APIB) was named in honour of the Mongolian People’s Republic. Moreover, Sqn 2 had a name of its own, *Mon**gol’**skiy a**rat*** (Mongolian *arat* – the latter word was Mongolian for ‘nomadic cattle-farmer’); its origin lay in the fact that during the Great Patriotic War Mongolian farmers had raised money to fund the construction of enough aircraft to equip an entire Soviet Air Force fighter squadron. Much later, in 1967, the squadron was singled out from the 2nd *Or**shan**skiy* GvIAP at Kzyl-Agach, Azerbaijan, and moved to Nalaïh where it joined the 266th APIB. Hence the MiG-27s of Sqn 2 bore the legend *Mongol’skiy arat* and the image of a horseman in full gallop.

In 1971 the unit received MiG-21PFs and MiG-21PFMs while keeping the MiG-17s and subsequently re-equipped with MiG-21*bis* fighters (date unknown). In November 1979 it began converting to MiG-27 fighter-bombers; these were second-hand aircraft transferred from a unit at Chortkov in the Ukraine, which received a newer version. Initially Sqn 1 flew the *Floggers*, while Sqns 2 and 3 stuck with the *Fishbed*. In 1980 or 1981 Sqn 1 re-equipped again with brand-new MiG-27Ks, turning over its old mounts to Sqn 3, which was staffed with rookie pilots; Sqn 2 also received new MiG-27Ks in 1981-82, ceding its old hardware to the ‘Unionside’ 58th APIB. One of the MiG-27Ks crashed fatally on 4th February 1983 when the pilot miscalculated the altitude at night and landed 20 km (12.4 miles) short.

Fighter units were added to the GSVM in 1971, becoming part of the 246th IAD headquartered at Choyr AB, 24 km (14.9 miles) from the town of the same name. The newly formed 104th IAP and 126th IAP both flew MiG-21PFMs; the former of the two deployed to the airbase at Man’t (Manita), 80 km (50 miles) from Ulaanbaatar, while the 126th IAP was based at Choyr. The latter unit eventually re-equipped with MiG-23Ms.

Nalaïh AB also became the new home of the 68th OVP equipped with Mi-4 and Mi-6 transport helicopters, which redeployed from the Transcaucasian MD. Other helicopter units were possibly based in Mongolia as well. Other bases used by Soviet aircraft in Mongolia were Ulan-Uul/West AB near Dzunbaian and Saïn-Shand AB; these were reserve airfields and no aircraft were permanently based there.

By 1989 the two fighter units had been withdrawn. However, the GSVM remained in Mongolia until the collapse of the Soviet Union. For example, the 126th IAP did not vacate Choyr AB until 1992. The airfield at Choibalsan was later reconstructed to become a civil airport.

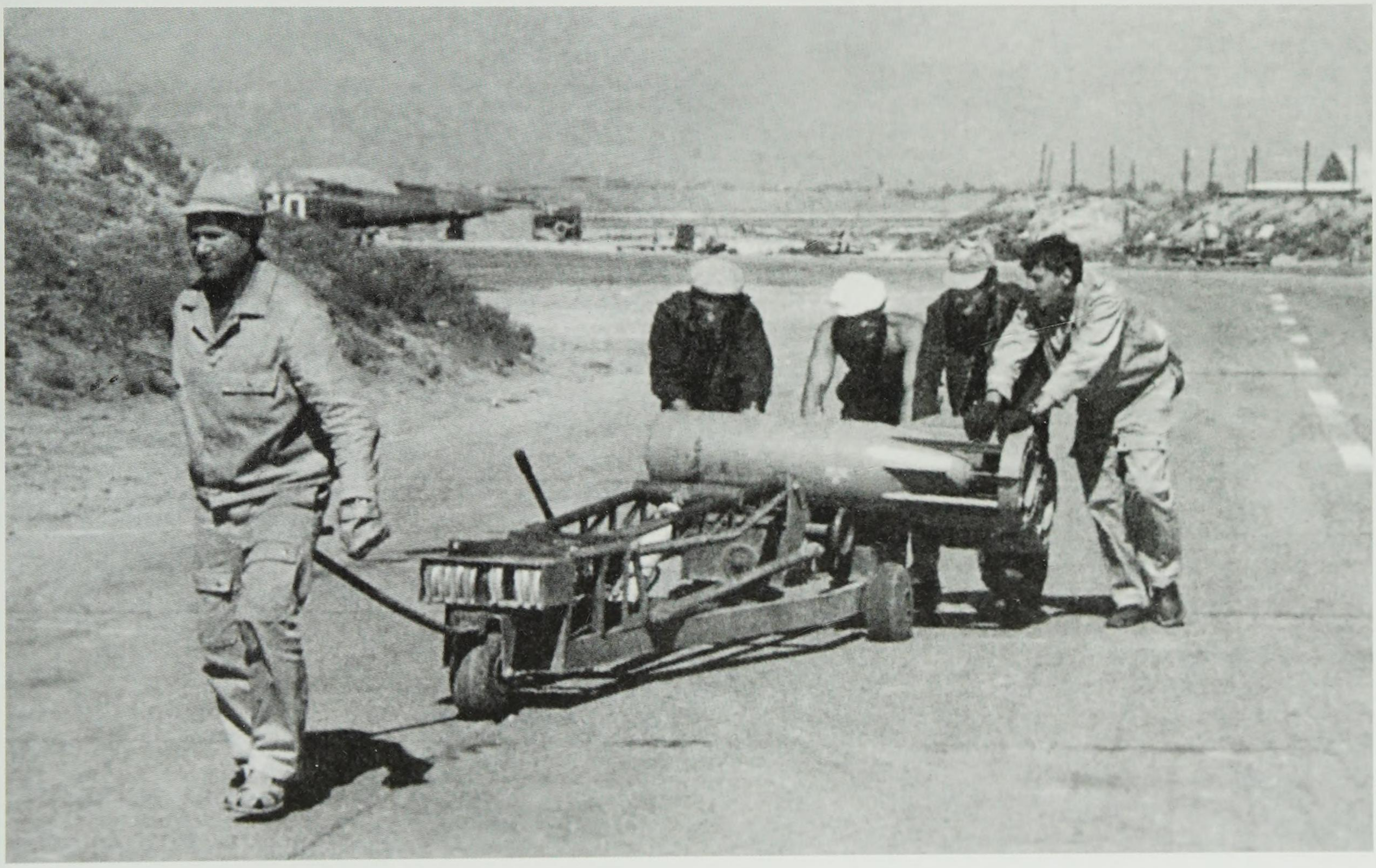
Opposite page: Armourers propel a dolly with two 250-kg bombs at a Soviet base in Afghanistan.

7 The Tactical Aviation and Army Aviation in the Afghan War

On 25th December 1979 the Soviet Union moved troops into Afghanistan in an attempt to settle feuds between rival communist factions and install in Kabul a more pro-Soviet government headed by Babrak Karmal. A second remit was to assist in dealing with the Islamic fundamentalist insurrections that had plagued governments of all persuasions since 1973. The Soviet interference had the effect of uniting the disparate Islamic groups who, from 1980, identified themselves as the Mujahideen (Persian for 'warriors') to form a coherent resistance to the Soviet forces and the Afghan communist government.

From the first day of the Soviet involvement the aviation component of the Limited Contingent of Soviet Forces (OKSV – *Ogra**nich**ennyy kontin**ghent** so**vet**skikh voysk*), alias the 40th Army, was the 34th SAK (Composite Air Corps). Initially the corps comprised two regiments of fixed-wing aircraft, with a total of 52 Su-17s and MiG-21s, and four independent helicopter squadrons. However, this strength and command structure was soon shown to be inadequate; hence the 34th SAK was soon beefed up and re-subordinated, reporting directly to the 40th Army HQ. In the course of the Afghan War the Soviet contingent re-equipped with steadily more advanced combat aircraft as troops were rotated and new units were seconded to the 40th Army; in some cases the advent of more advanced versions was a direct result of combat experience in Afghanistan.

Regiments were usually seconded to the 40th Army from the neighbouring Military Districts, such as the Turkestan MD and the Central Asian MD. It was customary for regiments to carry out a one-year tour of duty but, as only experienced pilots having Class 1 and 2 ratings were sent, it often entailed deployment of only two out of the three squadrons in the regiment. The remaining squadron stayed behind to train the less experienced pilots. At various times the 40th Army included the following FA and Army Aviation units:



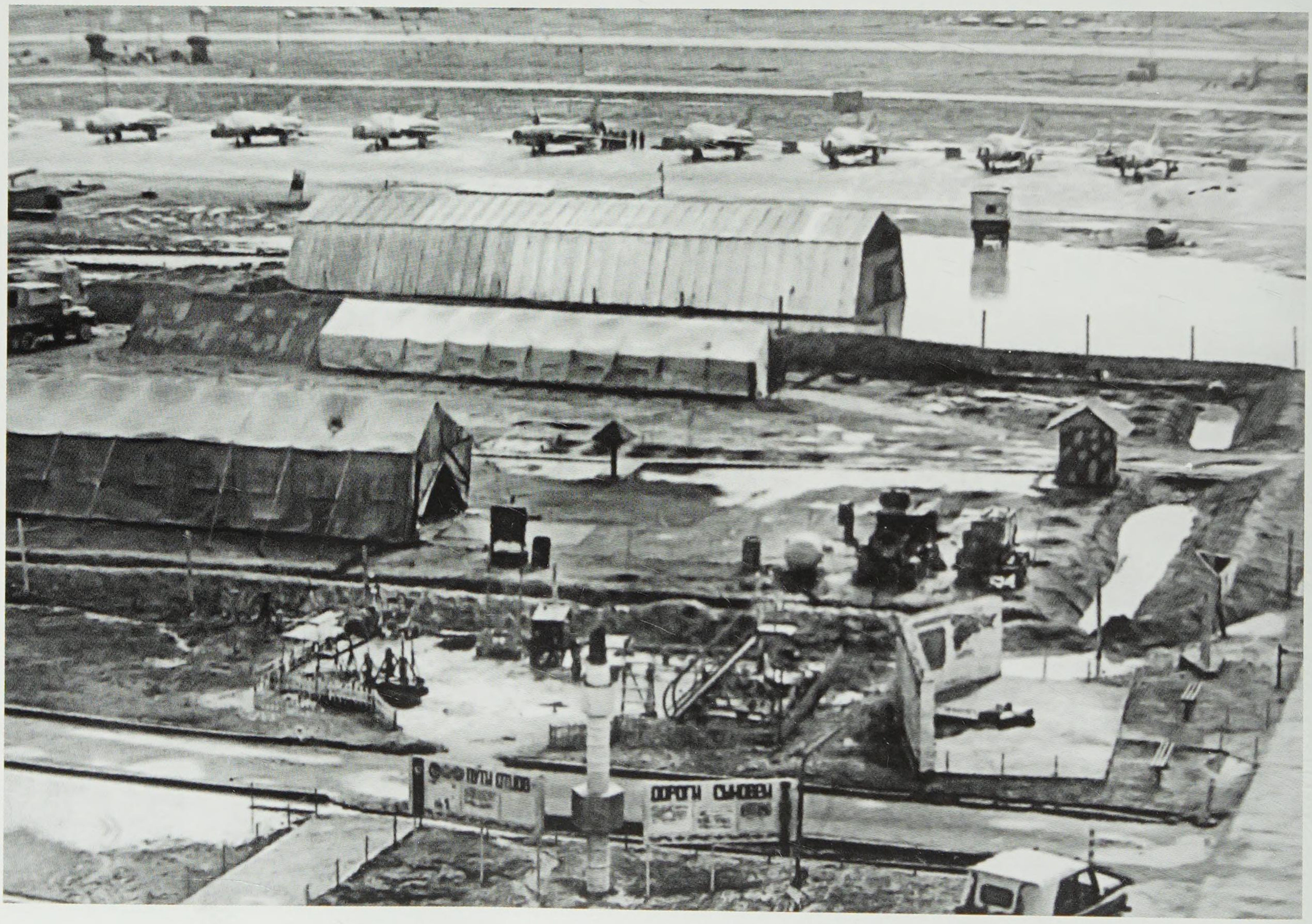
34th Composite Air Corps order of battle

Unit	Aircraft	Base	Notes
Fighter units			
27th GvIAP	MiG-21*bis*		
	MiG-21UM		
85th IAP	MiG-23MLD	Shindand (?)	Some sources say the unit was deployed to Bagram
	MiG-23UB		
115th GvIAP	MiG-21*bis*	Bagram	
		Kokaïdy (USSR)	
120th IAP	MiG-23MLD		
	MiG-23UB	Bagram	Last Soviet fighter unit in Afghanistan (1988 to 31-1-1989). From/to Domna AB, Transbaikalian MD
168th IAP	MiG-23MLD	Bagram (1 squadron)	
	MiG-23UB	Shindand (1 squadron)	
190th IAP	MiG-23MLD		
	MiG-23UB	Bagram	On deployment 1986 to August 1987
655th IAP	MiG-23MLD		
	MiG-23UB	Bagram	From/to Pärnu, Baltic MD
905th IAP	MiG-23ML/MLD		
	MiG-23UB	Shindand	From/to Taldy-Kurgan, Central Asian MD
927th IAP	MiG-21*bis*	Bagram	From/to Beryoza AB, Belorussian MD; deployed 6-1983 to 7-1984
982nd IAP	MiG-23MLD		
	MiG-23UB	Kandahar	From/to Vaziani AB, Transcaucasian MD
Fighter-bomber units			
134th APIB	MiG-27D	Shindand	On deployment 29-10-1988 to 1989
	MiG-27M		
	MiG-23UB		
136th APIB	Su-17M3	Kabul IAP	(Sqn 1)
		Bagram	(Sqn 2)
		Shindand	(Sqn 3)
156th APIB	Su-17M4	Maryy-2 AB (USSR)	
217th APIB	Su-17	Shindand	
	Su-17M		
274th APIB	Su-17M4	Shindand	
Attack units			
200th OShAE	Su-25	Shindand	On deployment 1980-84. Became, see next line
378th ShAP	Su-25	Shindand	On deployment 1984-89; some sources say two squadrons at Bagram and one at Kandahar
80th ShAP	Su-25		Sital-Chai AB, Transcaucasian MD; personnel only, seconded temporarily to 378th ShAP
90th ShAP	Su-25		Artsyz, Carpathian MD; personnel only, seconded temporarily to 378th ShAP
187th ShAP*	Su-25		Far Eastern MD; personnel only, seconded temporarily to 378th ShAP
Bomber units* (seconded from 73rd VA, Turkestan MD)			
143rd BAP	Su-24	Kokaïdy (USSR)	Home-based at Kutaïsi-1 AB, Georgia
149th GvBAP	Su-24	Kokaïdy (USSR)	Home-based at Alma-Ata, Kazakhstan
735th BAP	Su-24	Kokaïdy (USSR)	
Reconnaissance units			
39th ORAP	Yak-28R	Maryy-2 AB (USSR)	On deployment 1980
87th ORAP	Yak-28R	Kokaïdy AB (USSR)	On deployment 1980-87, seconded from 73rd VA, Turkestan MD
	Su-24MR		
263rd ORAE	MiG-21R		
	Su-17M3R		
	Su-17M4R	Bagram	

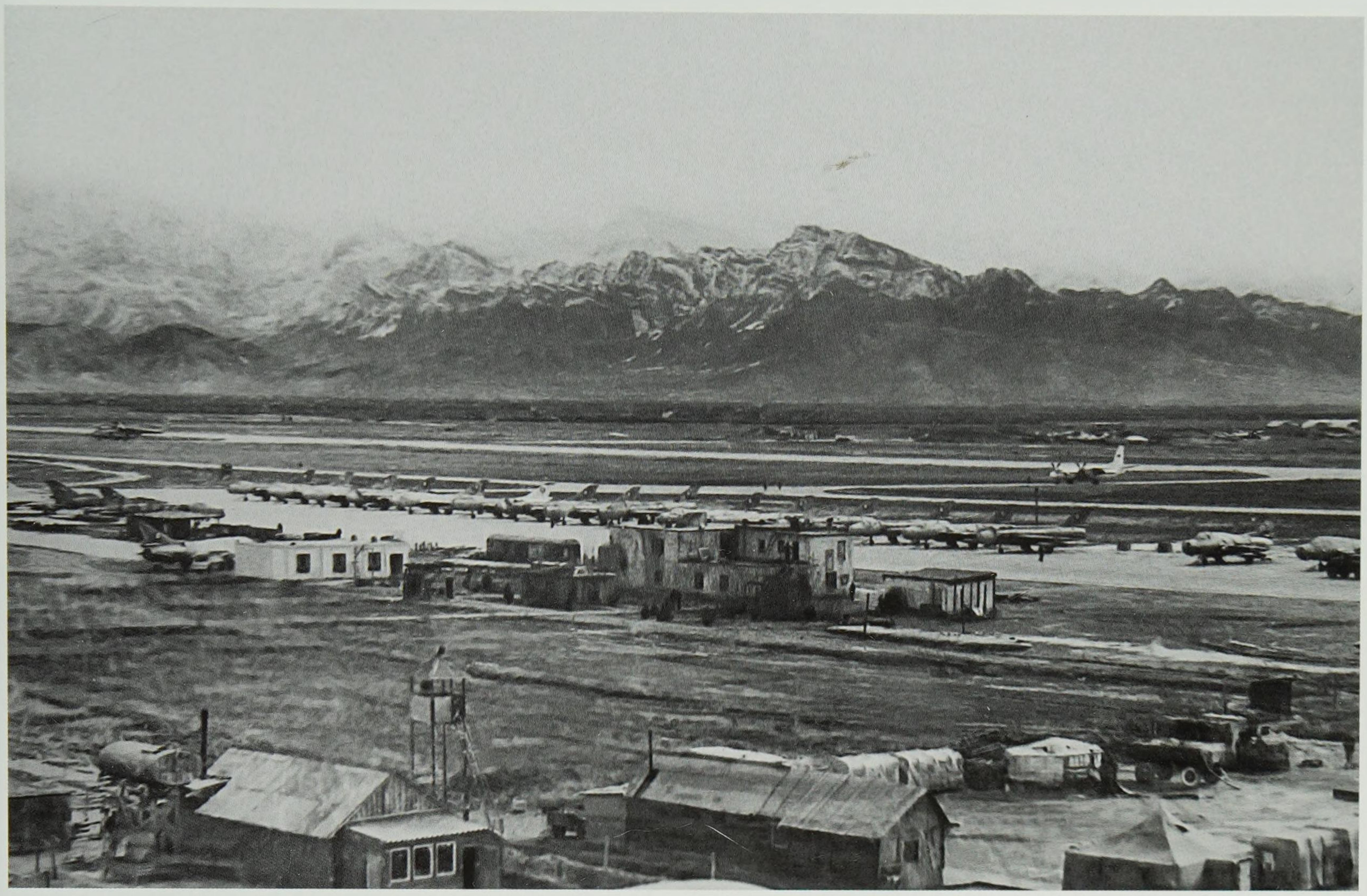
Composite units			
50th OSAP	An-12BK	Shindand; Kabul IAP	(Sqn 1)
	An-26		(Sqn 1)
	An-30B (?)		(Sqn 1)
	Mi-6A		
	Mi-8MT		(Sqn 3)
	Mi-24D		(Sqn 2)
	MiG-21		
111th OSAP	An-12BK	Tashkent-Toozel' (USSR)	
339th OSAE	An-26	Kabul IAP	Operated in the interests of Soviet military advisors
528th OSAE	An-26		The An-30Bs are also reported as operated by the 528th OSAE
	An-26RT		
	An-26RTR		
	Mi-8MT		
Army Aviation – helicopter units			
181st OVP	Mi-6		
	Mi-24V	Kunduz	
250th OVP	Mi-8		
280th OVP	Mi-6A	Kandahar	(Sqn 2)
	Mi-8T		
	Mi-8MT		
290th OVP		Bagram?	Possibly based at Kabul IAP; opening stage of the war only
335th OBVP	Mi-8MT	Jalalabad	(Sqn 2)
	Mi-24D		(Sqn 1)
	Mi-24P		(Sqn 1)
338th OVP		Bagram	
339th OVP		Bagram?	Possibly based at Kabul IAP
361st OVP	Mi-8MT	Chirchik (USSR)	Central Asian MD
	Mi-24		
101st OVP			Personnel only, temporary deployment
319th OVP			Personnel only, seconded from 5th OA, Far Eastern MD
399th OVP			Personnel only, seconded from 32nd OA
486th OVP			Personnel only, seconded from 8th GvOA, Group of Soviet Forces in Germany
205th OVE	Mi-8MT	Jalalabad	Commando (spetsnaz) unit
	Mi-24		
208th OVE	Mi-8MT	Lashkargakh	Base also reported as Jalalabad
	Mi-24V		
239th OVE	Mi-8MT	Lashkargakh	Commando (spetsnaz) unit
	Mi-24V		
254th OVE	Mi-24D	Kunduz	
262nd OVE		Bagram	Possibly a squadron of the 280th OVP
292nd OVE†		Jalalabad	Also reported as 292nd OVP*, seconded from 2nd GvOA
296th OVE			Seconded from 3rd Mechanised Army
302nd OVE		Shindand	
320th OVE	Mi-6	Kunduz	

* Heavy bomber regiments were also involved, operating from Soviet territory. † Reported as such but the 292nd OVE was based in East Germany until 1992 (see Chapter 6)!

Initially 90% of the 40th Army's aviation assets were concentrated at the few available Afghan airfields with paved runways and hardstands; only five airfields – Kabul International airport, Bagram AB near Kabul, Shindand, Jalalabad and Kandahar – were suitable for fast jets. This caused congestion; for example, Bagram could host as many as 150 aircraft at a time. This was bad because a single well-executed mortar attack by the Mujahideen rebels could cause tremendous damage. The only reasons that made the military put up with this were that the Mujahideen lacked the means to make an air raid and the bases were well guarded. Later, some of the regiments seconded to the 40th Army operated into



ПУТИ ОТЦОВ
ДОРОГИ СЫНОВЕЙ



Sneak shots of the airfield at Bagram in 1981. The base hosted Democratic Republic of Afghanistan Air Force Su-7BMKs and Su-22Ms and MiG-21MFs plus Soviet Su-17s attached to the 40th Army. Most of the ramshackle buildings seen here were constructed from empty bomb crates. Note the An-26 transport in Aeroflot Soviet Airlines colours on the taxiway, and the 'propaganda corner' in the foreground in the picture on the left.

Afghanistan from bases in Soviet territory located close to the border (in southern Uzbekistan and Turkmenia).

The Soviet aircraft had to operate in daunting conditions. For one thing, Afghanistan has very difficult terrain (mostly desert and mountains), making it difficult to navigate and detect targets (especially at low altitude) and reducing the time available for taking aim and using the weapons. There were occasions when pilots, on return from a mission, were unable to point out on a map exactly where they had dropped their bombs! Another problem in Afghanistan was the mountainous terrain – the peaks could rise as high as 3,500 m (11,480 ft). The abundance of natural hiding places for the enemy made it necessary to descend to 800-600 m (2,620-1,970 ft) in order to search for targets. In addition, the mountains made radio communications difficult and raised problems for the flight controllers. This adversely affected the accuracy of air strikes and reduced efficiency.

For another, the bases' infrastructure was woefully inadequate. Everything from ground support equipment and ordnance to food and bedclothes had to be flown in from the Soviet Union – roads were few and railroads were non-existent. Also, the airfields were located up to 2,500 m (8,200 ft) above sea level among tall mountains, which complicated operations.

Finally, Afghanistan is notorious for its inclement climate. In the winter the ambient temperature could drop to –30°C (–22°F); in the summer it could go as high as +52°C (125°F), reducing available engine thrust and impairing field performance. The heat caused equipment malfunctions and the rubber of the tyres deteriorated quickly, often leading to tyre explosions on touchdown. This was further aggravated by the frequent dust storms, known in Soviet military slang as *afghanets* ('the Afghan'). Dust always hung in the air above the valleys, up to altitudes of around 1,500 m (5,000 ft), seriously hampering visibility; moreover, it clogged filters and increased wear on the engines' compressor blades.

The exhausting climate and operational stress caused an increase in the number of human errors. Another factor was that the pilots in the first 'Afghan draft' were, on average, not more than 26 years old and lacked operational experience (much less combat experience). Quite often they would make repeated attacks from the same direction, making it easier for the enemy to use anti-aircraft assets and leading to unwarranted losses.

Camouflaged Soviet Air Force MiG-21*bis* fighters share the flight line with silver-painted DRAAF sister ships, with Soviet Mi-6 helicopters and An-12 transports parked beyond.

To remedy this, special training courses were set up. Initially the training took place at the units' home bases before the Afghan tour of duty; later this was done in a special training centre at Maryy (Turkestan MD) or *in situ*, taking into account the specific unit's missions and location. Still, the average pilot needed two to three months to adapt fully, whereupon his aiming accuracy would be more than doubled. Also, measures were taken to keep up the personnel's morale and psychological stability.

From March 1980 onwards, when the 40th Army started fighting in earnest, its aviation component fulfilled a wide range of tasks. The primary task was close air support (CAS); other tasks were strikes against predesignated targets (16% of the sorties), tactical airborne assault (28% of the sorties), photo reconnaissance and ELINT, insertion and extraction of Special Forces (commando) groups, artillery spotting, setting up minefields, transportation of personnel and materiel, combat search and rescue (CSAR), and casualty evacuation. Missions specific to the Afghan TO included protection of own troop convoys, protection of inbound/outbound transport aircraft at Kabul, seek-and-destroy missions against enemy supply convoys, patrolling the border and delivering personnel and materiel to border posts.

If a mission was flown in support of the ground troops, the assistance of forward air controllers (FACs) became essential. Failure to observe their information could cost dearly; in 1984 there was a case when a Su-17 pilot who had chosen to ignore the services of an FAC attacked a Soviet infantry battalion by mistake, killing four servicemen and wounding nine. Occasionally the FAC would actually summon the strike aircraft when new targets were detected. He could also warn pilots that they were under attack.

Heliborne assault was one of the most crucial kinds of operations throughout the Afghan War. Depending on the area, the scale of the operation, the number of bandits and the strength of their air defences the assault group could include a strike/suppression of enemy air defences (SEAD) package of fixed-wing attack aircraft suppressing the enemy on the approaches to the landing zone (LZ); a similar package (possibly mixed aircraft/helicopter package) sweeping the LZ itself; the transport helicopters delivering the troopers; a CAS helicopter package and so on.

Quite a large number of Soviet aircraft types passed their 'Afghan test'. The fighter component was initially represented by the MiG-21. At first, the Soviet Air Force intended to detach squadrons of the regiments operating the MiG-21SMT to Afghanistan because the *Fishbed-K*'s increased fuel capacity provided it with the longer endurance so needed for operations over mountains and deserts. Eventually, however, the heavy and sluggish MiG-21SMT disliked by Soviet pilots was not deployed to Afghanistan, with the fighter component of the 40th Army being made up initially of MiG-21*bis* *Fishbed-N* fighters; the better field performance of the MiG-21*bis* was probably the decisive factor. Later on, the OKSV's air arm was beefed up with MiG-21R tactical reconnaissance aircraft (see below for reconnaissance aircraft operations) and MiG-21PFM interceptors that had been taken over by fighter-bomber regiments following the MiG-21R's removal from fighter units. For instance, in early 1980 the 40th Army's combat air element included 14 MiG-21*bis* aircraft operated by a squadron of the 115th IAP at Bagram.

The 927th *Kenigs**berg**skiy* IAP commanded by Col. P. P. Tarasevich arrived from Beryoza AB, Belorussian MD, in June 1983 and fought on the Afghan TO until July 1984. With MiG-21*bis* fighters in its inventory at the time, the regiment was staffed with highly skilled air crews. Virtually all pilots who participated in the unit's Afghan tour had Pilot 1st Class ratings, many having gained experience in Cuba, Egypt, Ethiopia and Vietnam. Although the deployment to Afghanistan had been made at short notice, there were no major problems with the pilots' training. Selected personnel on their aircraft – 28 single-seat *Fishbed-Ns* and four MiG-21UM trainers – went on detachment. The regiment arrived at Bagram airbase on 25th June. Sorties were flown mostly to attack ground targets, while reconnaissance and escort missions (when the MiGs were called upon to escort fighter-bombers, helicopters and An-30 photo survey aircraft) were less frequent. From time to time the MiG-21s would scramble to intercept Pakistani aircraft intruding into Afghan airspace (aircraft of the 40th Army pulled alert duty at Bagram, Shindand and Kandahar). 25-30% of the sorties were dedicated to attacks on assigned targets.

On-call strikes were conducted on orders from the 40th Army HQ or a 40th Army staff officer on board an Antonov An-26RT *Curl* communications relay aircraft (*retrans**lya**tor*). The composition of the strike package and its weapons fit would be determined (aircraft with different weapons fits would be prepared in advance) and target co-ordinates would be conveyed in no time, the aircraft managing to scramble within 10-12 minutes after receiving the order. Interestingly, on the Afghan TO the MiG-21 was dubbed *ve**syo**lyy* ('the jolly one'), probably for its speed and agility, and this was the *Fishbed*'s radio callsign – 'Send a flight of *the jolly ones* to such-and-such an area'.

Fighting such an enemy as the Mujahideen guerrillas called for special tactics. Thus, consecutive strikes against ground targets by four

151st GvIAP pilots walk past their MiG-21*bis* fighters at Bagram in 1982.

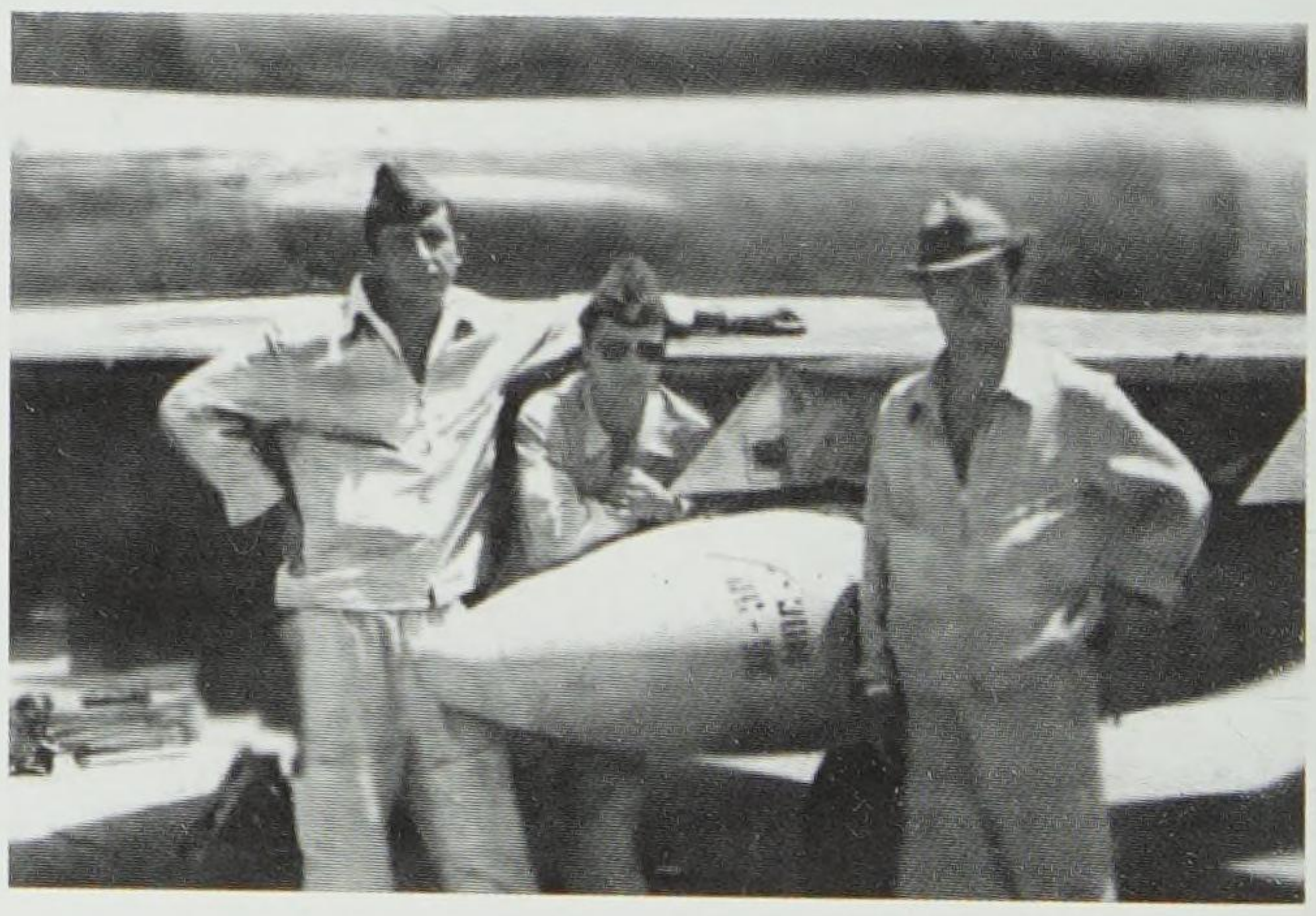
strike plus support packages became the basic tactics used by Soviet aircraft in Afghanistan. The first package, which handled the SEAD task and comprised two to four MiG-21s, would clobber the target area and mountain slopes on both sides of the anticipated bombing run, using cluster bombs and S-5 FFARs. It would be followed by a target designation package made up of two Mi-8 helicopters with FACs on board, which marked the target by dropping bombs or firing rockets. Next, the strike package (four to eight MiG-21*bis* aircraft) would attack, and the bombing damage assessment (BDA) package (two MiG-21R reconnaissance aircraft or Mi-8 choppers) would complete the mission. If pre-assigned targets were attacked, different aviation forces would operate in conjunction, using composite strike and support packages, such as a four to eight MiG-21 or Su-17 strike package (the MiG-21s normally carried four OFAB-250-270 HE/fragmentation bombs and the ammunition load for the GSh-23 cannon), a target designation package followed by the SEAD package (two to four MiG-21s or Su-17s), an escort package (two to four MiG-21s or the same number of Mi-24 helicopters), demonstration package (two MiG-21s or Su-17s) and, finally, the BDA package (two MiG-21Rs).

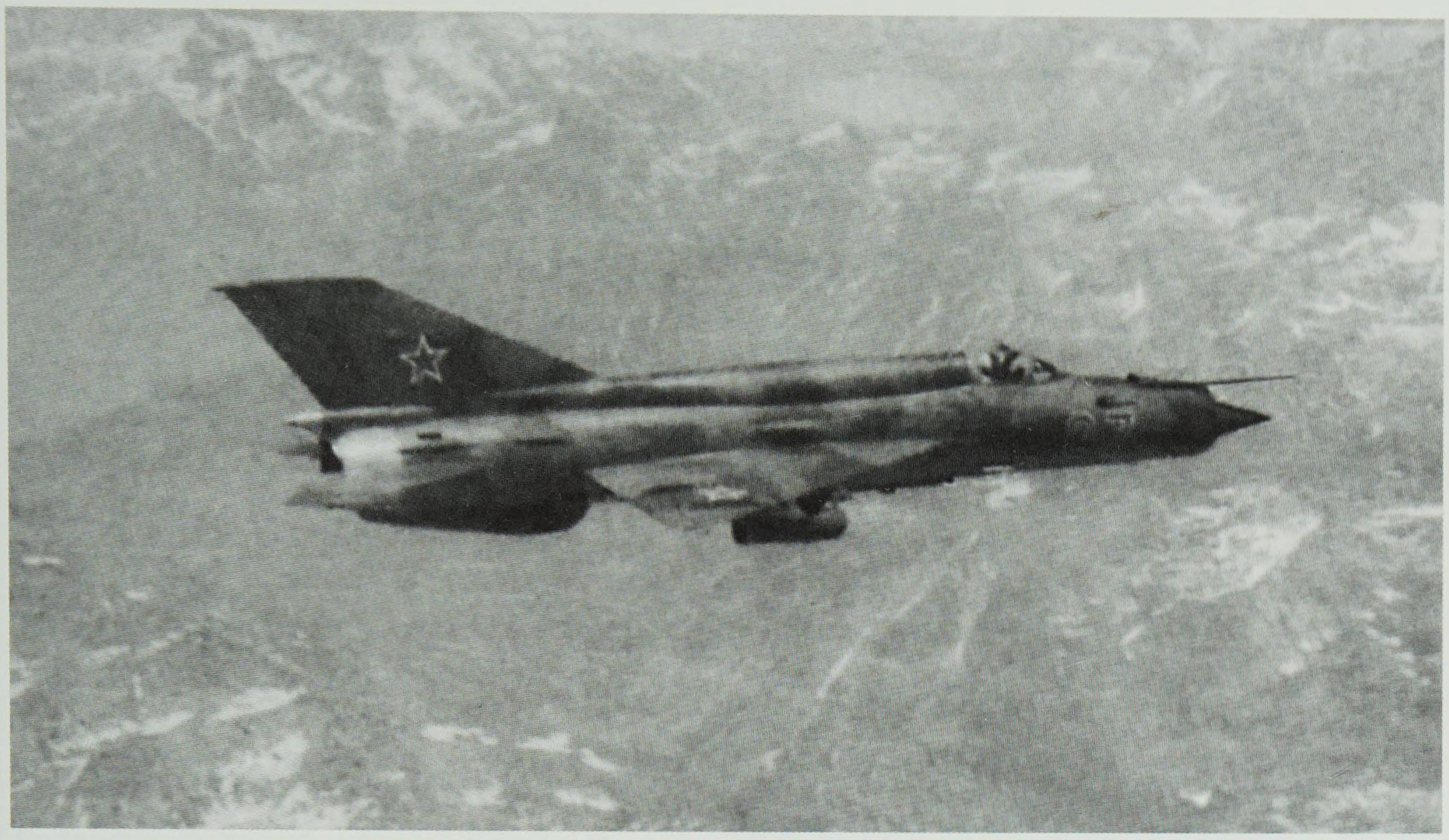
When tasking the aviators, the 40th Army's command did not really differentiate between fighter and fighter-bomber squadrons. Fighter pilots were on a par with their fighter-bomber colleagues as far as combat skills are concerned. Although the sighting gear on the MiG-21*bis* was pretty basic (the fighter boasted only an ASP-PFD gunsight), it is the skills and experience of pilots taking aim 'by means of the tip of the air data boom' that mattered in mountainous terrain, rather than high-tech automatic sights.

The MiG-21*bis* could lug up to a tonne (2,205 lb) of bombs, but normally its payload was limited to two 250-kg bombs (engine

927th IAP pilots pose with one of the unit's MiG-21*bis* fighters at Bagram in 1983.

927th IAP pilots beside a MiG-21*bis* armed with four S-24 unguided rockets.


This MiG-21*bis* carries two ZB-500 napalm tanks.



A MiG-21*bis* toting 250-kg bombs flies over the mountains of Afghanistan.

thrust dropped by 10-15% in the 'hot-and-high' conditions of Afghanistan). Under such conditions, its take-off run measured 1,500 m (4,920 ft) – well over the usual 850 m (2,790 ft) with a normal take-off weight; when loaded with two 500-kg bombs, the fighter had a hard time taking off and its rate of climb dropped considerably, which was not safe. At the same time, carrying a heavier payload at the expense of the fuel load was dangerous, with pilots always preferring to have enough fuel to be sure of returning safely. Under the standard operational procedure, pilots were to head north and punch out in the Soviet airspace after burning up the fuel, if they were unable to find their air base in Afghanistan for some reason.

FAB-250 HE bombs and OFAB-250-270 HE/fragmentation bombs with a kill zone of up to 1,200 m^2 (12,900 sq ft) were the weapons of choice for MiG-21 pilots, as were RBK-250-275 cluster bombs housing 150 AO-1SCh fragmentation bomblets each (these weighed 1.2 kg (2.65 lb) and had a cast-iron case producing a hail of fragments lethal within a 12-m/40-ft radius). Cluster bombs covered areas up to 4,800 m^2 (51,610 sq ft). Various versions of the S-5 FFAR were used as well, fired from UB-16-57 and UB-32-57 standard rocket pods. Large-calibre S-24 unguided rockets were used as well.

On one occasion, a pair of MiG-21s scrambled from Bagram when summoned to ward off Pakistani fighters closing in on an An-26RT which was flying at an altitude of 6,000 m east of Jalalabad. The encounter ended with no losses for either side.

MiG-21US and MiG-21UM trainers were also used a lot in Afghanistan. In addition to proficiency training, the two-seaters were used for familiarisation flights on which newly arrived pilots learnt the lay of the land for future reconnaissance and target designation. A seasoned pilot or a navigator with good knowledge of the terrain usually occupied the back seat. The *Mongols* also served for command and control during air attacks and for BDA, the back-seater acting as the observer.

Although the combat workload was high, pushing the aircraft to the limit, the MiG-21 proved to be very reliable during the war. Combat ready aircraft totalled 85-90% in their regiments, and there were few failures of even complex systems, such as navigation and communications ones. Nonetheless, the harsh climate caused additional problems: as mentioned earlier, the omnipresent dust clogged fuel filters, which could cause in-flight engine shutdown; the wheel brakes often overheated. Furthermore, aircraft had to be repaired on site. They would often use up their life between major overhauls in a year, after which a return to the USSR was required.

Mention should be made that the Democratic Republic of Afghanistan Air Force had MiG-21 fighters as well, but Afghan pilots flew only two or three days a week and did not trouble themselves with combat missions. To enhance the effectiveness of operations, Soviet instructor pilots often had to fly Afghan aircraft. Soviet pilots bore the brunt of the air operations in Afghanistan. Having spent a year in country, they would log as many as three times the annual peacetime flying hours, with

Field maintenance of a MiG-21*bis* in Afghanistan. Note the three-tone camouflage.

individual aircraft logging 450-470 sorties a year. The fighter pilots flew about 30% more sorties than the fighter-bomber pilots did, their sortie rate exceeding even that of attack aircraft pilots. With the passage of time, the ever-growing workload prompted the command to double the strength of the OKSV air regiments, drawing more pilots and ground crews from other units.

A total of 20 MiG-21s (including the reconnaissance version) were lost in Afghanistan in 1980-84. Most of them were downed by heavy machine-gun fire (the first was a 115th GvIAP MiG-21*bis* shot down near Jabal Ussaraj on 15th August 1980). However, there were other causes, too; all security measures notwithstanding, the rebels periodically made mortar attacks on the Soviet bases in Afghanistan, and on 11th May 1984 four 927th IAP MiG-21*bis* fighters were destroyed on the ground in such an attack.

MiG-23ML *Flogger-G* and MiG-23MLD *Flogger-K* fighters took a while to make an appearance on the Afghan TO. The first *Flogg*er regiment involved was the 905th IAP that deployed from Taldy-Kurgan in July 1984; one squadron went to Bagram and a second to Kandahar. Before departure, the selected aircraft were adapted to the hot-and-high conditions of Afghanistan by adjusting the engine starting system. Additionally, the SPO-15L *Be**ryo**za* (Birch) radar homing and warning system was linked to BVP-50-60 chaff/flare dispensers scabbed on each side of the top of the rear fuselage; each dispenser held sixty 50-mm (1$^{31}/_{32}$ in) LO-43 decoy flares.

Other regiments involved were the 85th IAP at Shindand, the 120th IAP at Bagram (from 1988 to 31st January 1989), the 168th IAP, with a squadron at Bagram and another at Shindand (from August 1987) and the 190th IAP at Bagram (from 1986 to August 1987). Each regiment deployed two squadrons, each with ten or twelve fighters plus two or three MiG-23UB *Flogger-B* trainers. It soon became apparent that the MiG-23UB could also be used successfully for bombing, reconnaissance and, more importantly, for designating targets.

It was intended that the MiG-23MLDs' main task would be escorting and protecting bombers and fighter-bombers particularly when involved in operations close to Pakistani border. Another assignment was to mount combat air patrols to attack helicopters bringing supplies to the Mujahideen. In these roles, two R-23R medium-range air-to-air missiles and two R-60M short-range AAMs could be carried, plus an 800-litre (176 Imp gal) drop tank. However, it transpired that these tasks took up no more than 15% of their time, the remaining time being spent in ground attack sorties. Although the MiG-23MLD could carry Kh-23M air-to-surface missiles when fitted with a Del'ta-NG guidance pod, these weapons were not used in Afghanistan, as the rebels were mostly operating in mountainous terrain, rendering accurate delivery of the missiles impossible.

Hence bombs of various types were the weapons of choice in Afghanistan, with unguided rockets also occasionally brought into play. A drop tank was invariably carried on the centreline and each wing glove pylon usually carried a 250- or 500-kg (551- or 1,102-lb) bomb. RBK-250 cluster bombs were particularly effective when attacking large concentrations of troops. The carriage of up to sixteen 100-kg (221-lb) bombs on four MBD2-67U multiple ejector racks was possible.

In the early stages of the Afghan War, the Second World War vintage ground attack technique known as the *karoo**sel'*** (merry-go-round) – or 'wheel of death' – was employed. The entire squadron circled above the target at an altitude safe from gunfire and the fighters dived onto it, one at a time, at an angle of about 40° to release their ordnance. When all had completed the bombing run, a strafing attack was often made.

This method of attack was only possible until the large-scale introduction of man-portable air defence systems (MANPADS) by the Mujahideen. Training camps and weapons stores were set up just across the border in Pakistan where the guerrillas were trained, and from there the missiles were distributed around Afghanistan. To reduce aircraft losses Soviet pilots were forbidden to release their bombs at altitudes below 5,000 m (16,400 ft); this did reduce losses, but accuracy was drastically reduced.

Since the Mujahideen had set up training camps in neighbouring Pakistan, DRAAF pilots unhesitatingly crossed the border to attack targets on Pakistani territory (so did the Soviet pilots occasionally, though they were not allowed to). One area that received their attentions particularly often was the Parachinar Salient, a section of Pakistani territory jutting deep into eastern Afghanistan. In January 1983, the Pakistan Air Force received its first delivery of General Dynamics F-16A fighters and on 17th May 1986 one of them shot down an Afghan Su-22M over Pakistan. By October 1986, Pakistan was able to deploy three squadrons (the 9th, 11th and 14th) of F-16As and F-16Bs close to the Afghan border to deal with violations of their airspace. Since the border was difficult to determine, the Pakistani pilots were all too keen to find excuses to attack the Soviet and Afghan aeroplanes. The 40th Army HQ laid down strict rules of engagement (ROEs) for Soviet pilots; basically, the latter were forbidden to attack a Pakistani aircraft unless it could be guaranteed to fall in Afghanistan and provide proof positive of an incursion. The F-16A pilots were under no such constraint, as the ROEs had been relaxed, and they were vectored onto Soviet trespassers by their ground radar stations. Once the target was found, the F-16s made a diving attack and climbed away before mounting another attack.

No Soviet MiG-23MLDs were lost to the F-16s, nor any F-16s to the MiG-23s, but there were some pretty close encounters, including a 'friendly fire' incident when the leader of an F-16 pair downed his wingman by mistake. There was a case when on 20th October 1988 an AIM-9 Sidewinder missile fired by an F-16 exploded close to a 120th IAP MiG-23MLD, perforating the top of the fuselage with splinters and knocking out some of the avionics, but the pilot was unhurt and brought the fighter safely to Bagram. The MiG was subsequently repaired, using parts from a sister ship from the same unit which had been written off in a landing accident on 8th November and cannibalised for spares. Parts from the same aircraft were also used to repair another MiG-23MLD which had overrun the runway at Bagram and struck a wall surrounding a watchtower.

Yet the *Flogger-Ks* did not avoid combat losses altogether. Eleven MiG-23MLDs were lost in 1985-89; most were shot down by ground fire, but three aircraft were lost in accidents – an engine failure in July 1985, a mid-air collision in October 1985 and the

Soviet MiG-21 pilots resting between sorties at Bagram. Some of the airmen are wearing hats of the kind issued to Soviet servicemen in the Central Asian military districts and in the tropics.

A MiG-21R with a Type D camera pod on a mission over the Panjshir Valley, Afghanistan.

aforementioned landing accident in November 1988.

Fighter-bombers were initially represented by the obsolete MiG-21PFM *Fishbed-F*. 13 MiG-21PFMs outfitted as fighter-bombers initially equipped a squadron of the 136th APIB at Kandahar. Later, the air arm of the 40th Army was beefed up with the Kabul-based 50th OSAP whose fleet included a squadron with 16 MiG-21PFMs.

Soon, however, the *Fishbed-F* was relieved by the purpose-built and far more capable Su-17 *Fitter-C*. Of the fighter-bombers used by the 40th Army, the Su-17 shouldered the main workload. It appeared on the Afghan TO in March 1980 when the 217th APIB flying initially the Su-17 *sans suffixe* and then the Su-17M was committed to action as the first Soviet strike air unit deployed to Afghanistan.

After a year's tour of duty the 217th APIB was relieved by the 136th APIB from Chirchik flying Su-17M3s; this arrived in full force, the three squadrons being stationed at Kabul, Bagram and Kandahar.

In 1981 the scale of military operations became even greater, necessitating the use of large aircraft groups. Due to the scarcity of suitable airfields and logistical problems in Afghanistan, strike aircraft now also operated into Afghanistan from Soviet bases – Chirchik and Kokaïdy in Uzbekistan, Kalai-Mor and Maryy-2 in Turkmenia. Such missions necessitated the use of drop tanks, with a corresponding reduction in weapons load; the latter, as a rule, was not more than 1,500 kg (3,310 lb). The insufficiently powerful S-5 FFARs gradually gave place to the more powerful S-8 FFARs with 3.5-kg (7.72-lb) warheads; these rockets were able to hit targets from beyond the range of enemy machine-gun fire. The 100-kg bombs used hitherto were ineffective as well and gave place to 250- and 500-kg HE or HE/fragmentation bombs.

The *Fitter-H* was the most widespread version employed in Afghanistan. When flown by a well-trained and experienced pilot, the Su-17M3 was an awesome fighting machine. It could carry out a wide range of missions in both automatic and manual sighting modes. Bomb-aiming in automatic mode often failed to work in mountain conditions, and the manual mode was favoured at first until a group of specialists was sent to Afghanistan in November 1983 – January 1984 to cure the bomb sight's 'mountain sickness'.

The risk of colliding with a mountain while making a bombing run (the 217th APIB lost two aircraft that way) required special tactics; for example, target approach at low level was followed by a sharp climb immediately before the target, the bombs being released from altitudes of 1,600 to 1,800 m (5,250-5,900 ft). The S-5 rockets were fired from a range of about 1,500 m (4,920 ft); this resulted in marked scatter which, combined with a relatively small explosive charge, greatly reduced their effectiveness. Hence the S-5 was used only against poorly protected and exposed targets. In attacks against fortified targets the S-24 heavy unguided rocket with a powerful 25.5-kg (56-lb) warhead proved its worth. Cannon pods, on the other hand, were found to be useless on jets in Afghan conditions.

Bombing accuracy improved with the increase in the dive angle. However, the greater the angle, the greater the altitude from which the dive was begun, and accordingly the altitude at which the bombs were released and recovery begun (so as not to be hit by fragments from one's own bombs). If the target was at 3,000-5,000 m (9,840-16,400 ft) above sea level, then a 40° dive had to be initiated from 6,000-7,000 m (19,685-22,965 ft), and the *Fitter* could not reach that altitude with four 500-kg bombs in the summer heat without using the afterburner. The 'hot and high' conditions sometimes limited the warload to three FAB-500 bombs, which made the take-off difficult, especially in a strong crosswind. At Kandahar airfield located 1,017 m (3,336 ft) ASL the runway was too short to permit take-offs with four bombs at ambient temperatures of +35°C (95°F) and higher.

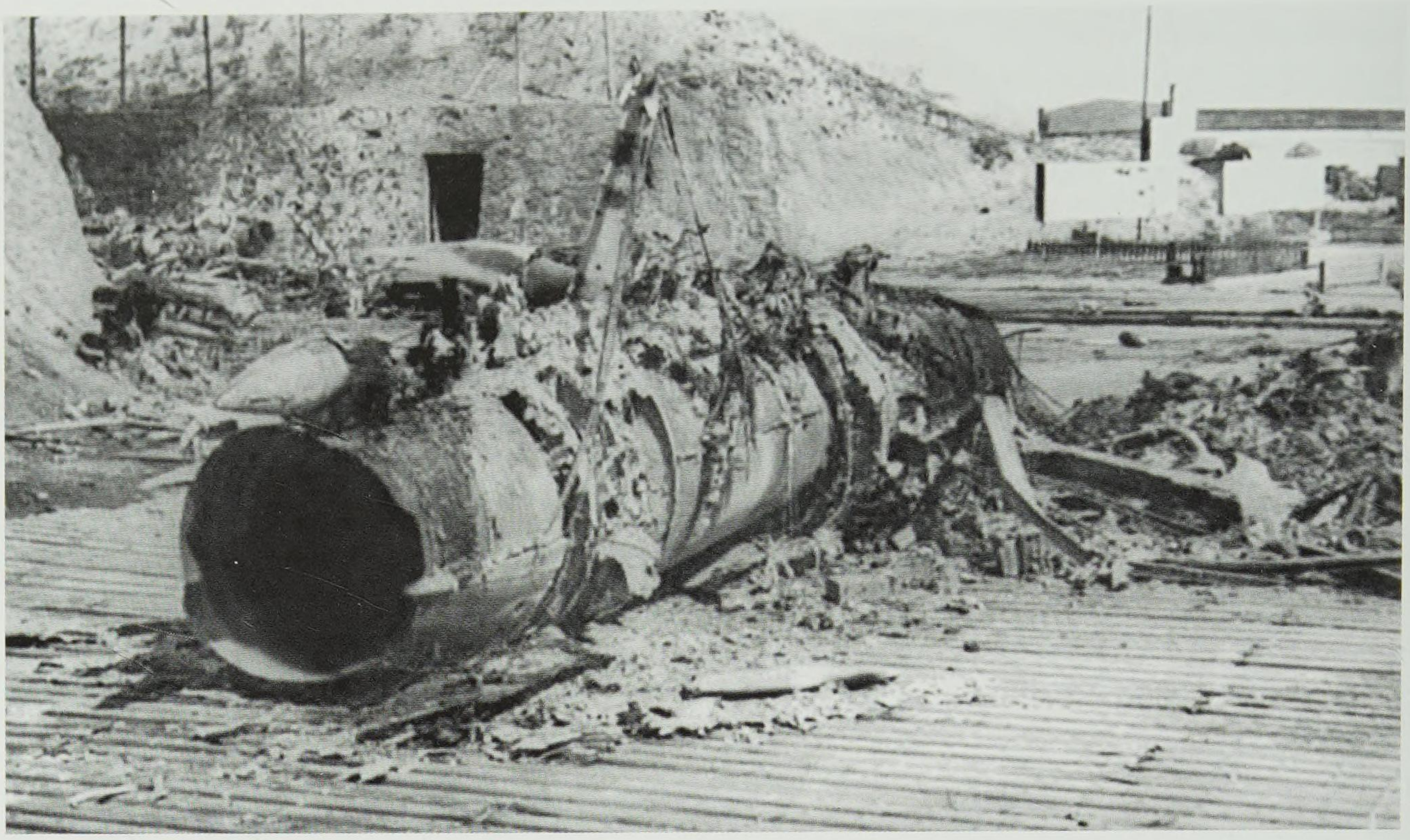
From 1980 onwards the Su-17 was used for blocking and mining mountain trails frequented by enemy convoys, demolishing Mujahideen hideouts and supply dumps. Yet another task for the Su-17 was to set up smoke screens protecting the ground troops.

New tactics were devised in order to reduce losses to ground fire. First, a pair of Su-17s acting as pathfinder aircraft appeared over the target at 800-1,000 m (2,600-3,300 ft) and 850-900 km/h (528-559 mph), designating the target with flare or smoke bombs. As a rule, they were flown by the unit's most experienced pilots. Next, a pair or flight of Su-17s diving from 2,000-2,500 m (6,560-8,200 ft) took out Mujahideen air defence positions with FFARs or cluster bombs. Next, the main strike group appeared, attacking with rockets and bombs; napalm and cluster bombs loaded with pellets were used against personnel in the open or in the 'green zone'. If a repeat attack was necessary, the aircraft fanned out to attack from different directions. Then, reconnaissance aircraft appeared again to make sure no nasty surprises awaited the incoming ground troops.

Based on operational experience, the 40th Army began forming composite aircraft/helicopter strike groups in which the Su-17s figured quite prominently. In addition to the usual targets, these groups working in co-operation with ground forces and airborne troops were tasked with destroying the so-called 'local Islamic committees' – bodies which recruited new guerrillas and organised resistance to the Kabul regime. Such operations were held in Fariab Province in December 1981 and near Rabat-e-Jali in Nimroz Province in April 1982. Of the 44 aircraft which took part in the former operation, 24 were Su-17M3s.

Later, the 156th APIB was deployed to Afghanistan as well, operating from its home base (Maryy-2 AB) and from Kandahar. When flying missions in outlying regions, the Su-17s from Shindand deployed to forward operating locations at Bagram and in Kandahar. Using Jalalabad as a base was avoided if possible, since Mujahideen mortar attacks there became a routine matter.

At first the enemy appeared to consist of small, unco-ordinated and ill-armed groups of guerrillas presenting little danger to military aircraft. The tactics used were, therefore, fairly simple – bomb or rocket strikes made at low level for greater accuracy. However, the scale of military operations mounted quickly. Aided by the West, the Mujahideen became better organised, training in special camps in Iran and Pakistan. The enemy was also better armed, with a large number of 12.7-mm (.50 calibre) Degtyaryov/Shpagin DShK heavy machine-guns (HMGs) and 14.5-mm (.57 calibre) ZGU-1 mountain AAA pieces (*zenit***nit***naya* ***gor****naya oosta***nov***ka*). As mentioned earlier, from 1983 onwards the Mujahideen acquired MANPADS in large numbers; at first these were Soviet 9K32 *Stre***la-2** (NATO SA-7 *Grail*) or its Chinese Hongying 5 copy, then the General Dynamics FIM-92 Redeye and the British Shorts Blowpipe, and finally the GD FIM-43 Stinger which had all-aspect engagement



The charred remains of a MiG-21*bis* which was destroyed by a Mujahideen mortar strike.

Another victim of enemy action. Note that the hardstand is surfaced with perforated steel planking (PSP).

capability. To minimise losses, new tactical recommendations were issued. The target approach was to be made at high speed and altitude, followed by a dive at 30-45°, which made it difficult for the enemy to track the target. To achieve a surprise strike, a single run combining the simultaneous release of bombs and firing of rockets was prescribed. True, the accuracy of such attacks was halved because of the high altitude and speed involved, but this was compensated by the use of a greater number of aircraft in the strike group, all approaching the target from different directions – if the terrain permitted – and by a greater expenditure of munitions.

A new *Fitter* unit appeared on the Afghan TO in 1985; it was the 168th APIB, which deployed to Kandahar from Shiraki AB, Georgia. On 13th February 1985 the unit lost its senior political officer, Maj. Aleksandr K. Ivanov, who ran his Su-17M3 into the ground while making a night attack against a target 70 km (43.5 miles) north of the base. One more unit from Georgia, the 166th APIB from Marneuli, saw action in Afghanistan in 1986.

Of all Soviet types on the Afghan TO, the Su-17 suffered perhaps the highest losses. 33 aircraft were shot down or crashed in the course of the war (this figure includes the reconnaissance version dealt with later). Sometimes the losses were caused by hardware malfunctions; in 1984 (exact date unknown) a pair of 156th APIB Su-17M3s was setting up a minefield when an anti-personnel mine exploded prematurely after leaving the dispenser, inflicting fatal damage on the aircraft. The pilot ejected, breaking a leg as he landed on the rocks; luckily for him the CSAR helicopter arrived promptly, evacuating him. In many cases the losses that occurred were brought about by tactical errors in the use of the fighter-bombers. Thus, in 1984, a Su-17 was shot down near Kandahar after making six (!) runs over the target.

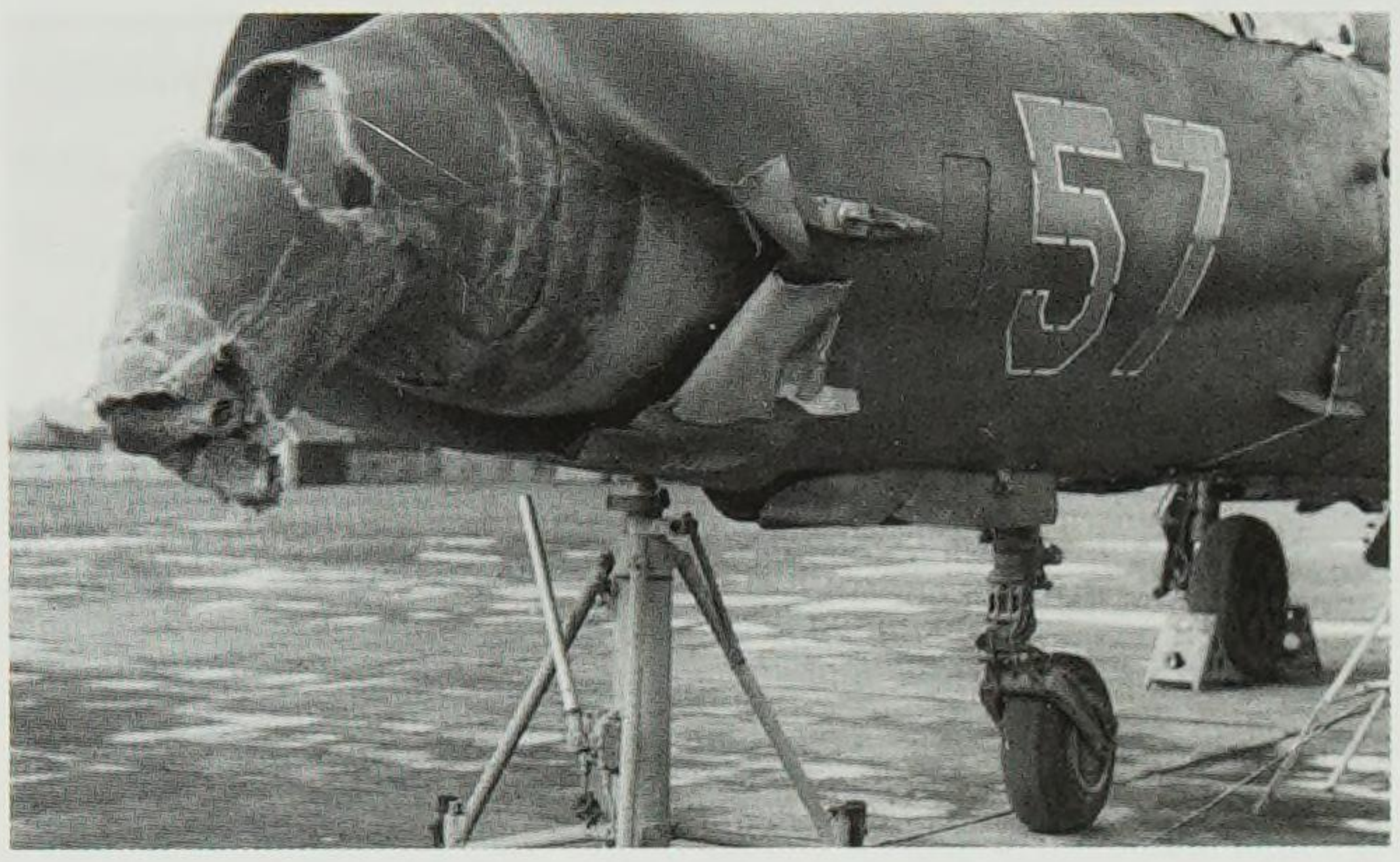
Nonetheless, in Afghanistan the Su-17 proved to be a highly effective and robust aircraft. In 1986, while carrying out a strike in a region near Bagram dubbed 'Black Mountain' by the Soviet military, a 263rd ORAE Su-17M3R was hit by enemy fire and burst into flames. To eject would have meant certain death – the ground fire was so intensive that the CSAR helicopters would have been shot down immediately. Therefore, contrary to all peace-time orders, the pilot decided to press on towards home. The machine did not let him down; the fire was extinguished after he had landed and the aircraft was eventually repaired. And God knows how many times the aircraft returned with holes caused by ground fire in all imaginable places (for example, in the engine's compressor section). The Su-17's sturdy structure was a great bonus. There were incidents when shot-up aircraft would overrun the runway, burying themselves in the ground right up to the fuselage. These were repaired on the spot and returned to service. The AL-21F-3 engine worked reliably even when hot sand and stones were ingested, with damaged compressor blades or contaminated fuel.

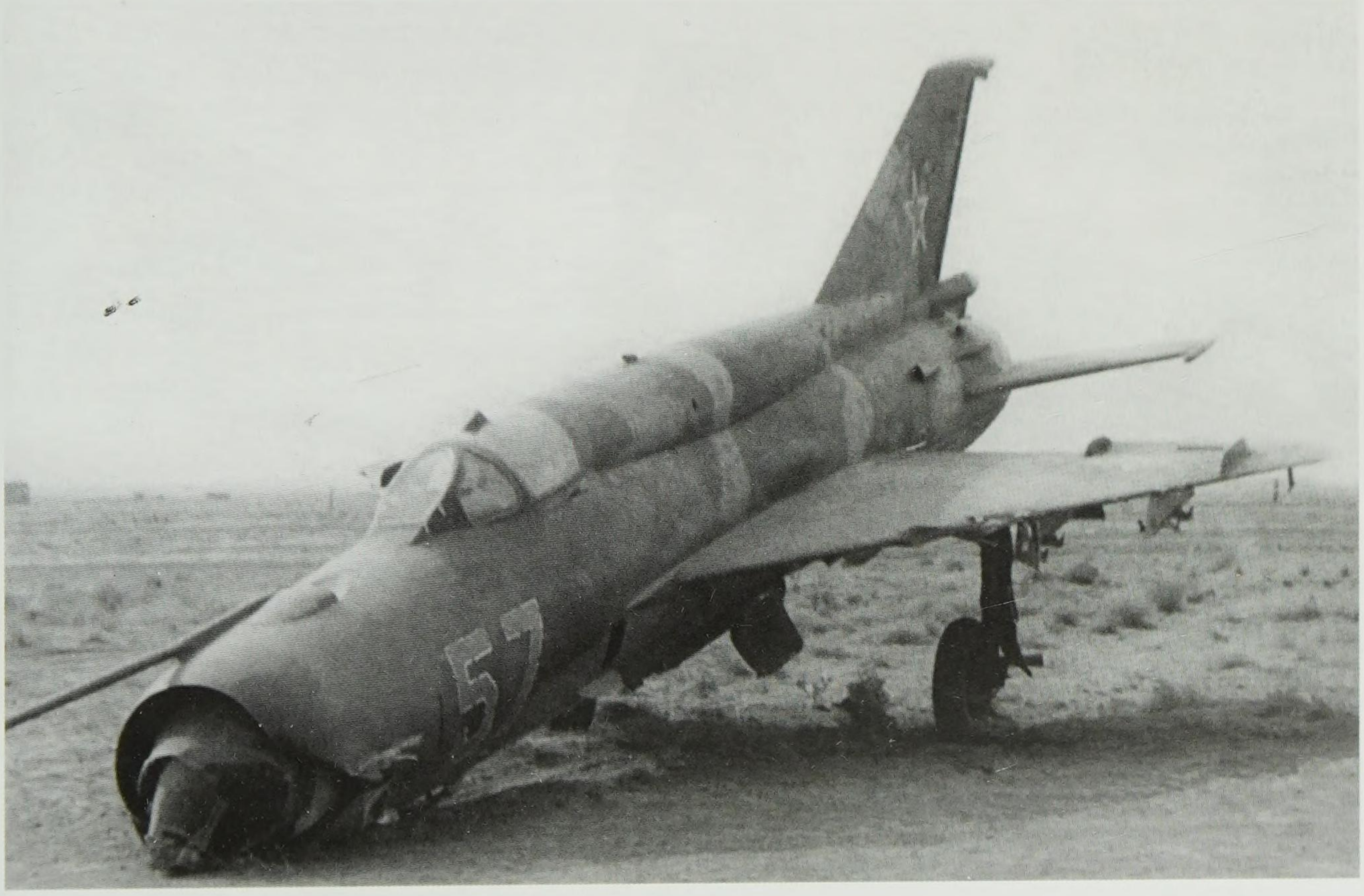
From 1985 onwards all types of Soviet combat aircraft and helicopters in Afghanistan were fitted with ASO-2V chaff/flare dispensers, each with thirty-two 26-mm (1.02-in) PPI-26 decoy flares, for protection against heat-seeking missiles. At first, the Su-17s operating in Afghanistan carried four such units, then the number was increased to eight and finally to twelve. To facilitate use of the system, the flares were launched automatically when the rocket launch button or the bomb release button was pressed.

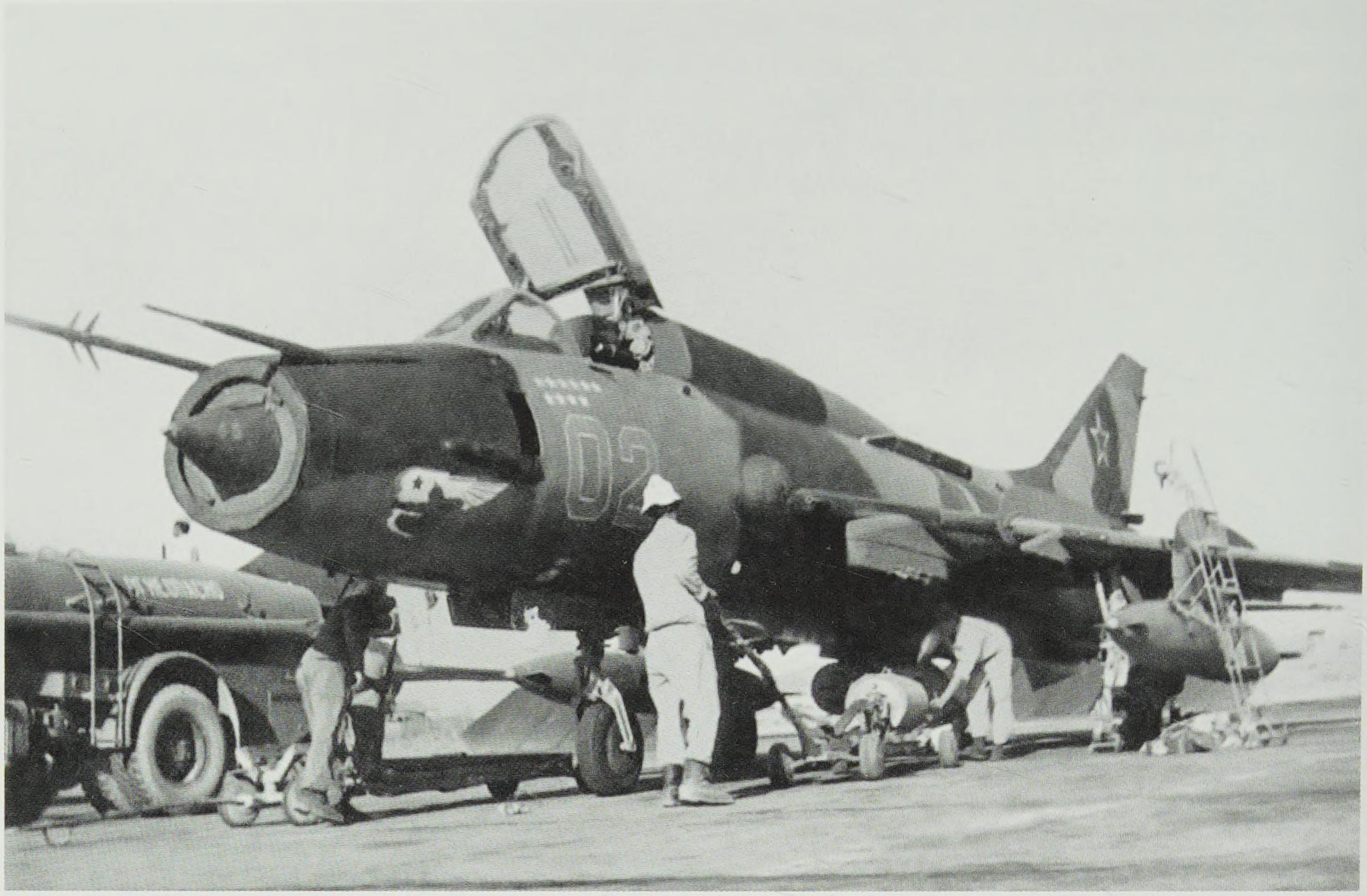
Another means of defence against MANPADS was to equip some of the aircraft in the strike group with flare bombs, which were powerful heat sources. Su-17 fighter-bombers carrying out additional target reconnaissance were sometimes used for this. Large infrared decoys could also be ejected from KMGU pods. The measures taken enabled a significant cut-back in losses to be achieved.

The 274th APIB from Kalinin (Migalovo AB) operating out of Kokaïdy and Shindand, and the 302nd APIB from Pereyaslavka AB (14th November 1988 to 14th February 1989), which operated out of Kokaïdy, were the sole Su-17M4 units on the Afghan TO. The 40th Army lost only one Su-17M4 in Afghanistan – a 274th APIB aircraft (in August 1988). Officially the aircraft was destroyed by a mortar attack at Shindand. An unofficial version is that, taking advantage of the night darkness, some servicemen decided to steal a little fuel from the aircraft, which was sitting fuelled and armed for tomorrow's sortie, with the intention to sell the fuel (kerosene was a valued commodity among the local populace). In so doing, trying to get some light, they were clumsy enough to start a fire. When the fire engine arrived on the scene it was too late – the cannon ammunition started exploding and the fire-fighters prudently chose to stay away. (Some sources, though, mention a Su-17M4 from the same unit that was shot down 75 km (46.6 miles) north-east of Bagram on 12th January 1988.)

When the Su-17M3 or Su-17M4 fighter-bombers had dropped their bombs, they carried out manoeuvres to avoid being hit by


A MiG-21*bis* coded '57 Red' jacked up after a crash landing when the nose gear failed to lower. The extent of the damage is clearly visible.


The same aircraft in a rather undignified position before recovery from the runway. The pointed radome dug in and buckled when the nose touched the ground.

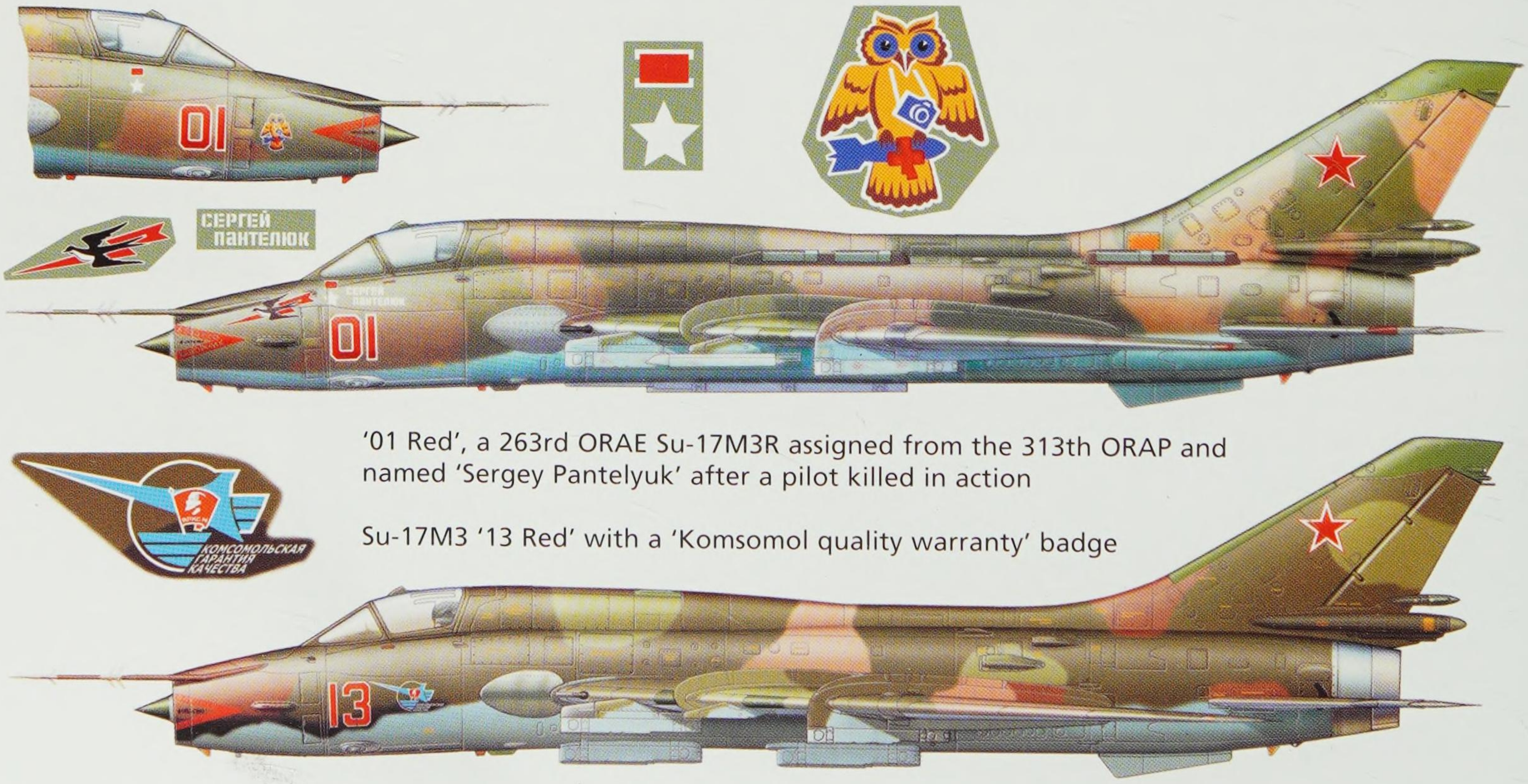


Su-17M3 '02 Red' equipped with ASO-2V chaff/flare dispensers and sporting ten mission markers below the windshield is being armed with 250-kg cluster bombs. A TZA-7.5-500A fuel bowser stands alongside, waiting to top off the aircraft's tanks. Note the drop tank transportation dolly on the left.

bomb fragments or by missiles. At first these manoeuvres were done using full afterburner, but later this became impossible, as the Stingers invariably found their mark if the afterburner was ignited. Manoeuvres to evade missiles involved climbing at 29-30° to induce side-slipping and the release of IRCM flares. Bursts of HMG fire passed to the left of the aircraft, and missiles homed in on the decoys.

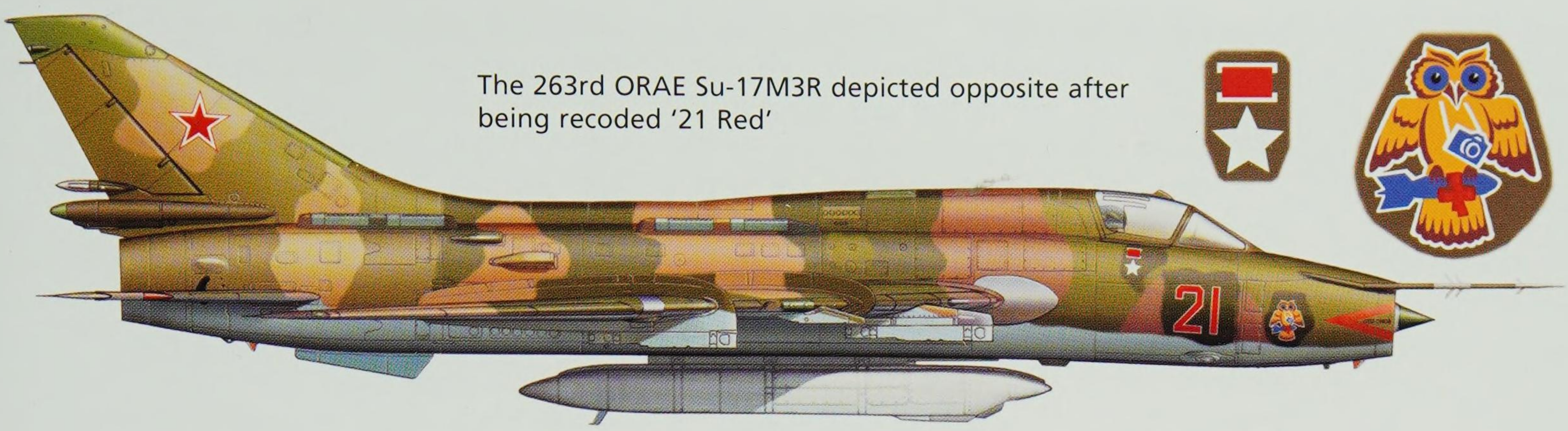
It was not just the Mujahideen who introduced technical innovations. The Soviets began to use fuel/air explosive (FAE) munitions. These were troublesome, but when they did work properly they were a terrifying weapon. Smart bombs with laser guidance were also used, as well as Kh-25ML and Kh-29L laser-guided air-to-surface missiles.

During the 'Afghan period' the Su-17 was constantly modified to enhance survivability. Damage analysis showed that most often it was the engine, its accessories, the fuel, hydraulic and control systems that were put out of action. Measures to counter this included adding armour plate to protect the



'01 Red', a 263rd ORAE Su-17M3R assigned from the 313th ORAP and named 'Sergey Pantelyuk' after a pilot killed in action

Su-17M3 '13 Red' with a 'Komsomol quality warranty' badge



The 263rd ORAE Su-17M3R depicted opposite after being recoded '21 Red'

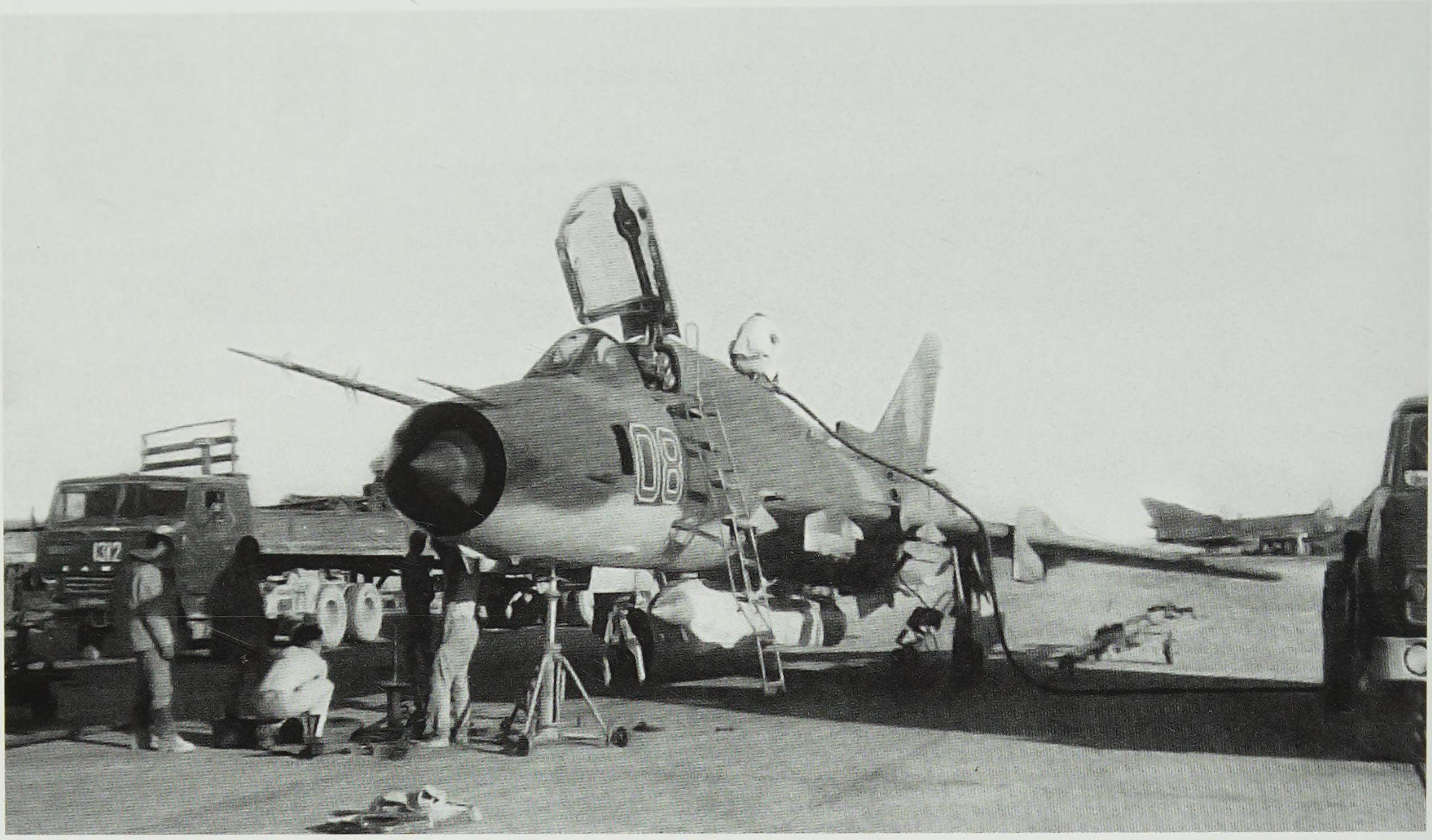
engine accessory gearbox, the generator and the fuel pump, filling the fuel tanks with explosion-suppression polyurethane foam and pressurising them with nitrogen which prevented the fuel vapour from igniting or exploding when the tanks were hit by shrapnel or bullets. Changes were also made to the ASP-17 sight to prevent it from overheating in the hot climate. A fault in the design of the brake parachute was also rectified; its securing lock sometimes came away so that the aircraft ran off the end of the runway, suffering damage.

During the concluding phase of the war, in 1988, the Soviets used Su-17M4 fighter-bombers fitted with an upgraded long-range navigation (LORAN) system which provided automatic flight to the target at high altitude and area bombing. Sometimes, if the target was obscured by cloud, Su-17M4s performed so-called navigational bombing. The accuracy of such strikes was not very high, and there were cases when friendly Afghan forces were bombed. One of the biggest operations at this stage was Operation *Magistrahl'* (Mainline) aimed at deblocking the besieged city of Khost.

The MiG-27's involvement in the Afghan War was the only participation of Soviet/Russian Air Force MiG-27s in actual combat. At first, it appeared that the 40th Army would not require the type; the fighter-bomber role had been successfully filled by the Su-17, and it seemed sensible to minimise the logistic problems by not introducing yet another aircraft into the theatre. All three fighter-bomber regiments flying the *Fitter* in the Turkestan and Central Asian Military Districts located closest to the action had done a tour of duty in Afghanistan. However, of course the MiG-27 pilots of the 129th and 134th APIBs were also keen to see action and their lobbying, together with the desire of Maj.-Gen. Timchenko (the Commander of the Central Asian MD Air Force) to test the MiG-27 in action, led to a change of policy. The two MiG regiments received orders to prepare to move to Afghanistan. It has also been suggested that the head of the VVS of the 40th Army, Maj.-Gen. D. S. Romanyuk, a former commander of a MiG-27 fighter-bomber division, was supportive.

Both regiments were equipped with MiG-27D and MiG-27M *Flogger-J* variants but the 134th APIB also had one squadron of MiG-27K *Flogger-J2s*, the most advanced but also most complex variant. The use of Stinger missiles by the Mujahideen precluded low-altitude attacks and the MiG-27K's sophisticated ***Kaïra*** (Great Auk) TV/laser sight and PrNK-23K navigation/attack system were ineffective when used at high altitudes over such mountainous terrain. Consequently, a decision was taken to leave the MiG-27K in the USSR, deploying only the simpler (and virtually identical) MiG-27D and MiG-27M variants. As mentioned earlier, it was customary to send only two squadrons from a regiment on an Afghan tour, the third staying behind. This time, however, the command decided to send the 134th APIB in full three-squadron strength by drawing experienced pilots from the 129th

A Su-17M3 pilot discusses the aircraft's preparation procedures with the crew chief. Note the non-standard insignia with no white edging and the open hatch for the flight data recorder on the port side of the fin.



263rd ORAE Su-17M4R '04 Blue' is refuelled and serviced; the nose has been jacked up for a nosewheel change. The aircraft was assigned to the squadron from the 886th ORAP.

APIB to form a third squadron. Thus the unit arrived in Afghanistan with 36 MiG-27D/Ms and four MiG-23UB trainers.

Before leaving their home base, the regiment underwent extensive training on a mountainous firing range in Kazakhstan. In addition, the aircraft were modified by scabbing a flare dispenser holding sixty 50-mm (1 63/64 in) LO-43 decoy flares onto each side of the upper rear fuselage and adding an NAZ-7B survival pack (*no***sim***yy ava***reey***nyy za***pahs** – portable emergency kit) to the ejection seat. As had been the case with the MiG-23MLD, the engines received an upgraded starting system more suited to the hot-and-high environment and the higher turbine temperature was restored (a lower setting had been introduced previously to increase time between overhauls in spite of a reduction of available power).

On 29th October 1988 the regiment led by Lt.-Col. V. S. Markelov arrived in Shindand to relieve the 274th APIB. The pilots of the departing Su-17M4s regiment stayed on for a few days to help the newcomers familiarise themselves with the terrain and were assisted by the MiG-23MLD regiment also based there. The 134th APIB was able to operate independently from 3rd November.

At this late stage in the campaign there was an increased threat of mortar/rocket attacks on the airfield and, of course, this threat grew as time passed. These attacks were usually conducted at extreme range and, while doing little damage, littered the airfield with burning phosphorus shells that had to be extinguished with sand. Nonetheless, reasonable precautions were taken to protect susceptible sites and new take-off and landing procedures were developed to minimise the time when the aircraft were vulnerable. As an additional precaution, decoy flares were always fired during take-off and landing.

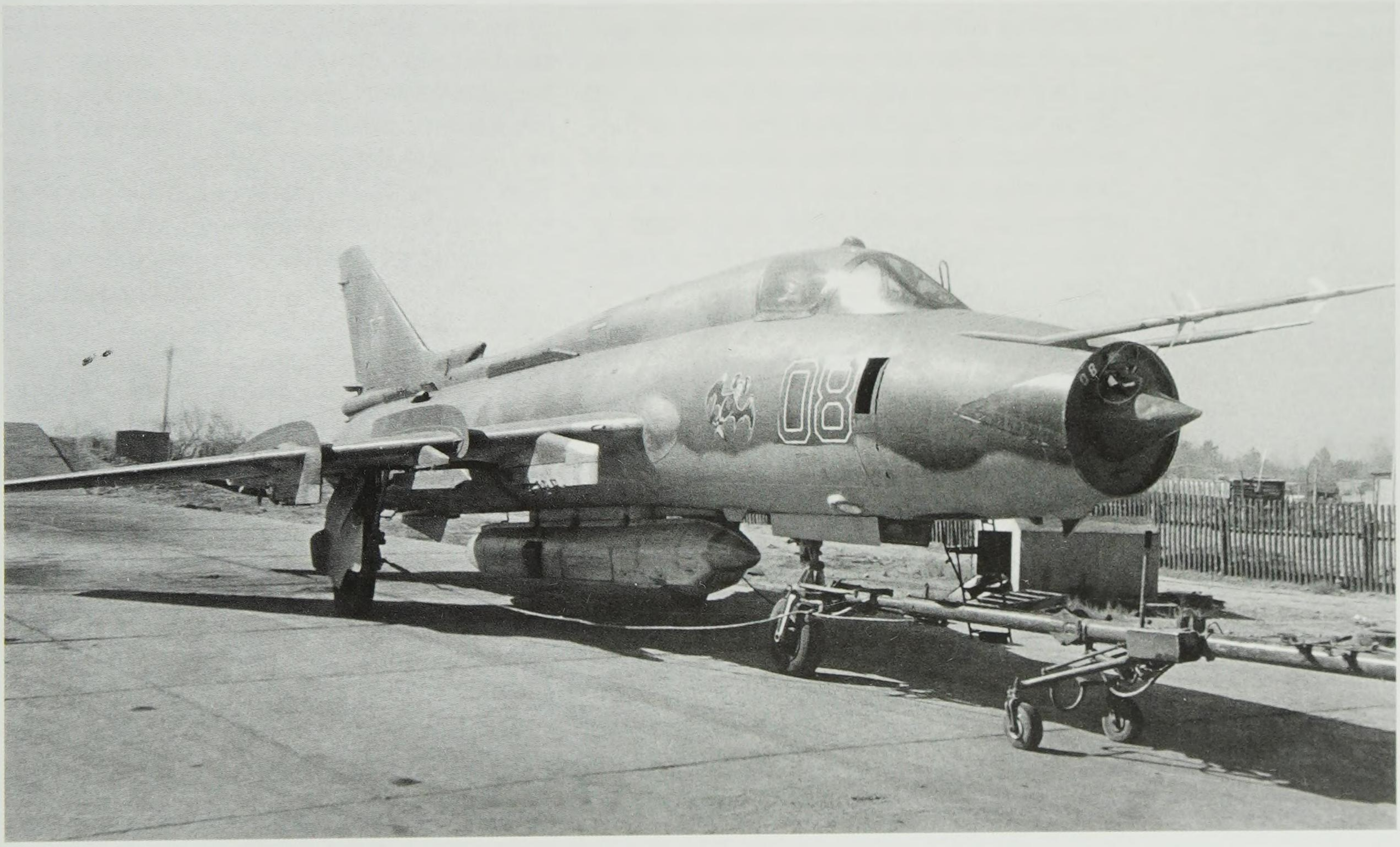
Although the MiG-27D/Ms were primarily designed to use air-to-surface missiles, these could not used in Afghanistan due to the mountainous terrain and the ever-present danger of a Stinger missile attack. Soviet authorities insisted that aircraft maintain a minimum altitude of 5,000 m (16,400 ft). Such was the danger that pilots were disciplined if found transgressing this order.

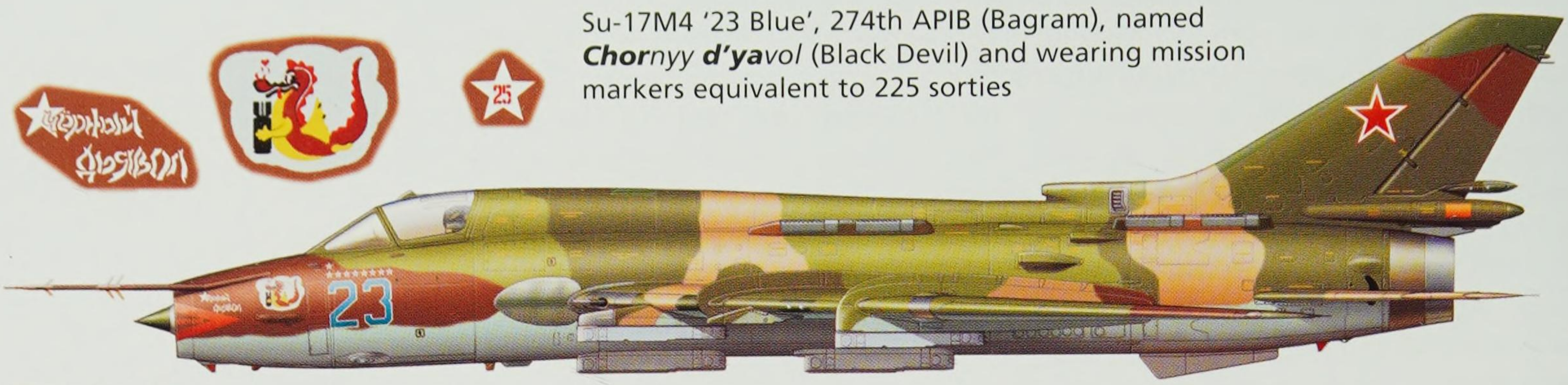
At no time in the campaign did the MiG-27s carry AAMs and when attacking targets near the Pakistan border they were escorted by MiG-23MLDs to guard against attacks by Pakistani F-16As. Unguided rockets were useless, as the 5,000 m ruling put the targets beyond their range. There was one possible exception – the S-24, which could be used, despite having a theoretical maximum effective range of only 4,000 m (13,100 ft). Similarly, the 30-mm cannon was rarely used. Therefore the MiG-27 and Su-17 were used as high-level bombers swooping down, usually at a 45° angle, to 5,000 m (16,400 ft) before releasing their bombs with no guarantee of accuracy; a strike within 50 m (164 ft) of the target was considered acceptable by the authorities. Col. Aleksandr V. Rutskoy, the Deputy Commander of the 34th SAK, never tired of pointing out to his superiors the futility of this approach but his protestations were in vain. Towards the end of their Afghan tour, the 134th APIB spent time scattering mines along known roads and tracks used by the Mujahideen in an attempt to hamper their movements.

Targets were designated by the Air Force HQ of the 40th Army in Kabul and the regiment CO was informed the day before the mission, giving him time to brief his pilots and plan the attack, which was reconfirmed by Kabul on the following morning. In addition to the usual forays on troop concentrations and specific targets there were seek-and-destroy missions in the evening and during moonlit nights to disrupt supply convoys. Later, attacks were made on the Mujahideen who were besieging Kandahar, a little less than 400 km (249 miles) away from the airfield. For this mission an 800-litre (176 Imp gal) fuel tank was carried on the centreline pylon. In theory the MiG-27D/M had sufficient internal fuel for a combat radius of 800 km (497 miles) with 1,000 kg (2,205 lb) of bombs, but this was eroded substantially by the need for steep take-offs, formation assembly and long searches for the target. The usual war load carried was two 500-kg (1,102-lb) or four 250-kg (551-lb) bombs of various types.

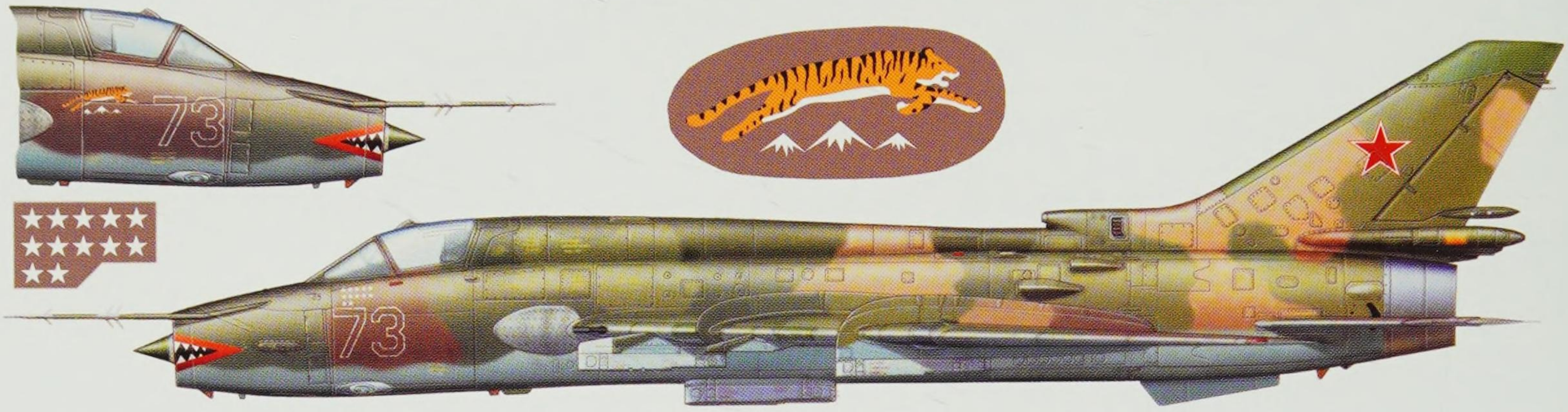
It was commonplace for attack missions to be flown in full squadron strength, with three or four such attacks daily, and pilots were expected to perform a minimum of three sorties a day. After take-off, the formation comprised six pairs in line astern (each pair in echelon formation) to maintain visual contact with the pair ahead. On arriving at the target area the squadron often split into pairs to attack specific positions or search for targets of opportunity. Attempts at automatic bombing using the SAU-23B and PrNK-23M equipment gave poor results with no better than a 300-500 m (984-1,640 ft) scatter and therefore these instruments were used only from the base until approaching the general target area. On attacking the target in a 45° dive, the pilot tagged it with his Klyon-PM (Maple-PM) laser rangefinder/marked target seeker (LRMTS), stabilised the aircraft and, after dropping his bombs, climbed swiftly away to allow the next aircraft to attack.

This level of activity gave plenty of work to the ground crews who not only had to keep the aircraft flying but also had the job of rearming them for each sortie. At this stage, the


Another view of the same aircraft fitted with a KKR-1 pod and ready for a mission. The 'BomBat' badge worn by 886th ORAP aircraft during their Afghan tour of duty with this squadron was carried on the starboard side where the boarding ladder would not scuff it.



Su-17M4 '23 Blue', 274th APIB (Bagram), named ***Chor**nyy **d'ya**vol* (Black Devil) and wearing mission markers equivalent to 225 sorties



Su-17M4 '73 White outline', 302nd APIB, with the 'Danger, air intake' stencil converted into a sharkmouth. The nose art may refer to the target, Mujahideen leader Ahmad Shah Massoud, who was known as 'the Panjshir Tiger'.

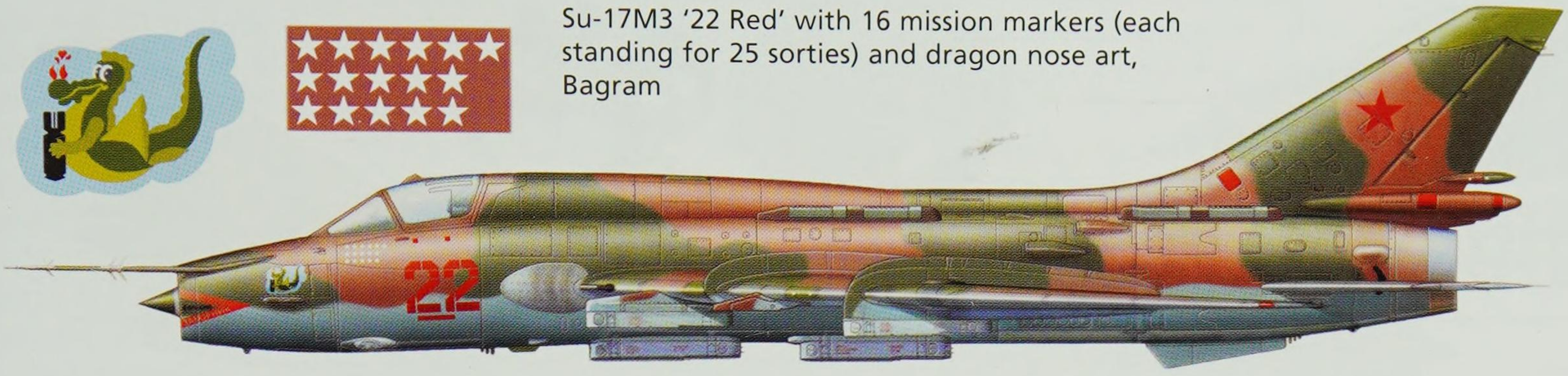
maintenance was on a 'war footing' involving systematic pre-flight and post-flight procedures replacing the customary planned maintenance. Aircraft were allowed to fly with defects, provided these did not affect their flying or fighting ability, but intervals between scheduled inspections were increased. Re-arming aircraft between sorties was very labour-intensive and many off-duty pilots and technicians were pressed into service as auxiliaries. It soon became necessary to enforce a rule that nobody except the pilot was allowed access to the cockpit once the aircraft had been bombed-up. Bitter experience had shown that it was all too easy to retract the undercarriage, fire off some decoy flares or even press the cannon firing button inadvertently.

For such a complex aircraft the MiG-27D/M had a surprisingly high utilisation rate. This, as some cynics point out, was due in no small part to the limited use made in Afghanistan of the automatic navigation and attack systems, and particularly of the 30-mm cannon whose powerful recoil shook the aircraft structure.

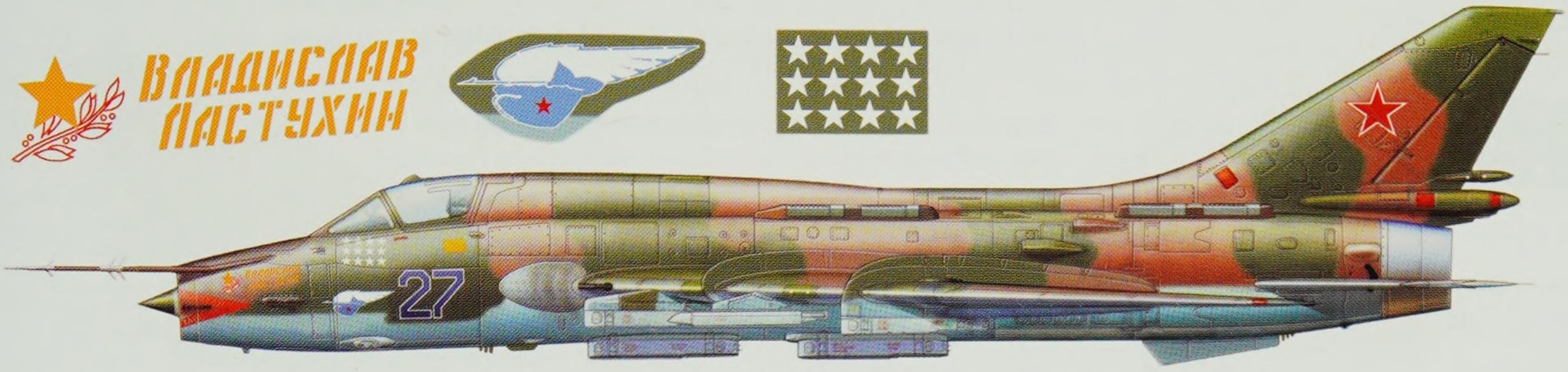
In 1989, as the Soviet forces withdrew, more supply convoys for the Mujahideen arrived from adjoining countries, and ten 134th APIB aircraft were assigned to fly extra night operations. On these seek-and-destroy missions the MiG-27s operated singly or in pairs, flying only over flat terrain or the foothills of the mountains, the pilots keeping their eyes peeled for vehicle headlights and campfires. Due to the latter they called such a mission 'a campfire chase'. Operations over the mountains were only permitted on clear nights. On occasions the MiGs would locate an enemy position and drop a single SAB-100 flare bomb or multiple SAB-250-200s to mark the target for Soviet artillery. The duration of these night missions was usually kept to less than one and a half hours, as the strain on the pilots was immense. Aircraft also suffered – not only due to greater utilisation but also because in the darkness the landings were inevitably heavier, the pilots finding it harder to judge the altitude.

It was originally planned for the regiment to be among the last to leave Afghanistan on 27th January 1989 but it finally left Shindand on 4th February for Kalay-Mor, a reserve base 50 km (30 miles) inside the Soviet border. There the 134th APIB waited in case of a recall to Afghanistan and only returned to home base on 4th March. The unit's pilots had performed on average 75 sorties during the Afghan tour, each pilot logging between 60 and 70 hours on missions.

The strike aircraft best suited to the conditions of the Afghan War was the Su-25 *Frogfoot-A*. This well-armed, heavily protected and agile attack aircraft had received its baptism of fire in Afghanistan during Operation *Romb* (Rhombus) – its combat evaluation in April-June 1980, which it passed with good results. At the orders of Soviet Air Force Deputy Commander-in-Chief, Marshal



Su-17M3 '22 Red' with 16 mission markers (each standing for 25 sorties) and dragon nose art, Bagram

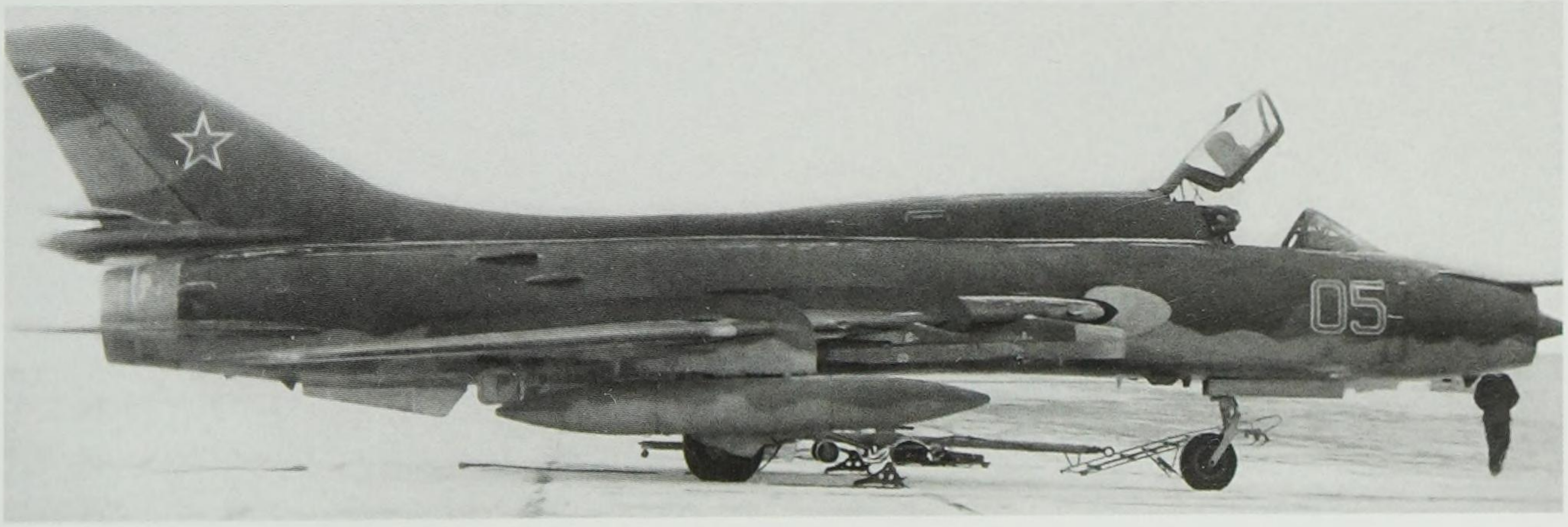


Su-17M3 '27 Blue' with 12 mission markers, named 'Vladislav Lastukhin' after another pilot killed in action.

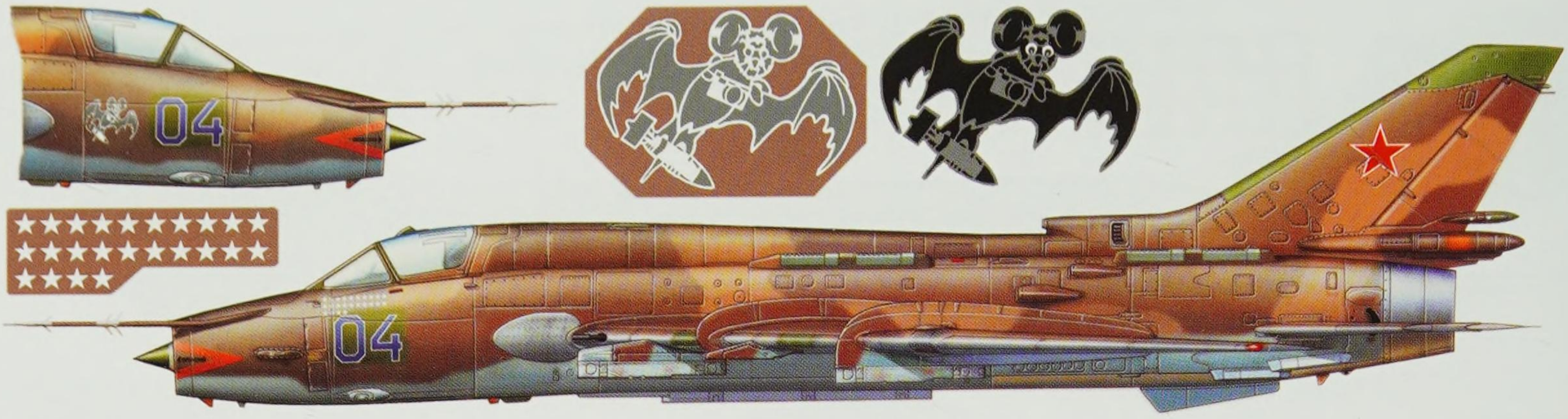
Aleksandr N. Yefimov, a squadron of Su-25s – the 200th OShAE (*ot**del'**naya shturmo**va**ya* ***a**viaeskad**ril'**ya* – Independent Attack Air Squadron) – was formed in the spring of 1981, using personnel from the 80th OShAP at Sital-Chai, the 4th TsBP i PLS at Lipetsk, the Sukhoi OKB and GNIKI VVS. Commanded by Maj. A. M. Afanas'yev, the squadron arrived in Afghanistan on 19th July 1981 and took up residence at Shindand AB, whose personnel was already familiar with the Su-25 from Operation *Romb*. The Su-25s joined the action just a few days after their arrival; Maj.-Gen. Vadim N. Khakhalov, a senior officer of the military combat inspectorate, visited the base soon afterwards with a personal order from the Air Force C-in-C to assess the aircraft's effectiveness. (Khakhalov was by no means a 'chairborne aviator'; he flew combat sorties in Afghanistan and was killed in action on 15th September 1981 when his helicopter was shot down during a reconnaissance mission.)

The unit's 'area of responsibility' included the area of Kandahar, Afghanistan's second largest city, which lies close to the Pakistani border. From there the main roads and mountain trails to the south used by the rebels' supply convoys passed into Afghanistan. The 200th OShAE was tasked with strikes not only against targets in the mountains, but also against Afghan towns and villages held by the Mujahideen. For example, in the struggle to regain control of Herat, which had become the centre of the armed opposition in the west of the country, Su-25s carried out strikes against buildings which had been turned into rebel strongholds containing weapon stashes.

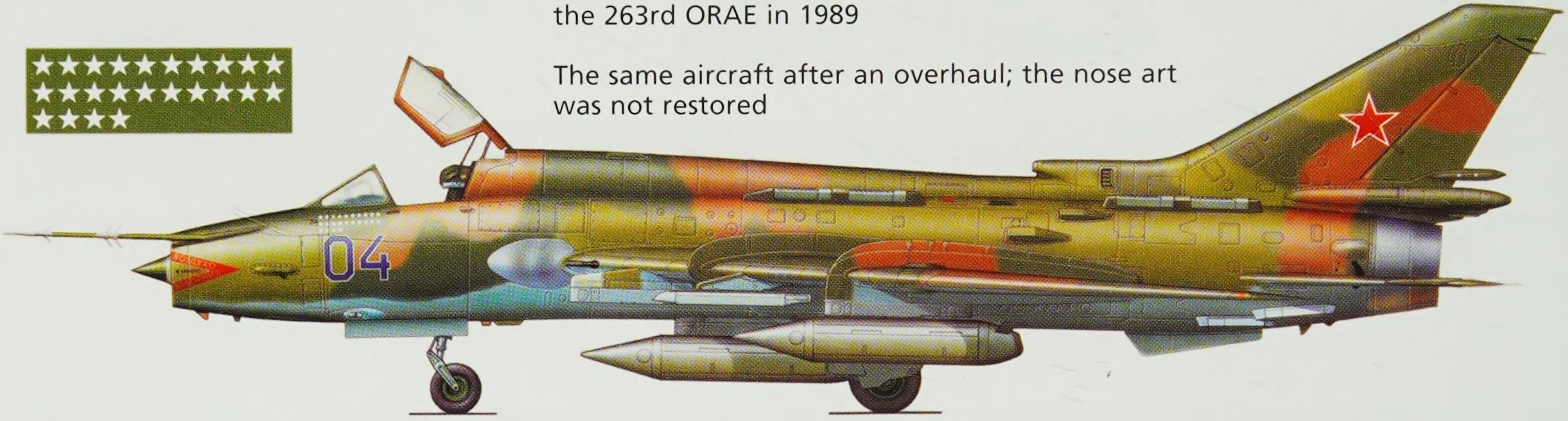
Thanks to its large wing area and powerful high-lift devices the Su-25 differed notably from other Soviet combat aircraft in its excellent field performance. A Su-25 armed with eight FAB-500 bombs required a take-off run of 1,200-1,300 m (3,900-4,260 ft), whilst the Su-17M fighter-bombers could only manage



'05 Red', another 263rd ORAE Su-17M3R. This one lacks the additional chaff/flare dispensers.



Su-17M4R '04 Blue' during its tour of duty with the 263rd ORAE in 1989



The same aircraft after an overhaul; the nose art was not restored

to become airborne with two such bombs at the very end of the runway. The Su-25's excellent manoeuvrability also turned out to be extremely useful in the mountainous terrain. After detecting a target, it was possible to bank steeply to turn back onto it and, during repeat attacks on the same target, to carry out orbits without losing sight of the enemy, using ammunition sparingly to finish it off. In contrast, the pilots of other Soviet fighters and fighter-bombers were often unable to find the target again when turning back for a repeat attack. In October 1981, one of the 200th OShAE Su-25 pilots managed to knock out a Mujahideen gun emplacement hidden in rocks at the end of a long winding gorge. Previous attempts to bomb the position from above had been unsuccessful, but the Su-25 had managed to fly into the dark 'funnel' of rocks, manoeuvring between the sides of the gorge and, after hitting the target, climbed out, using a steep combat turn to escape.

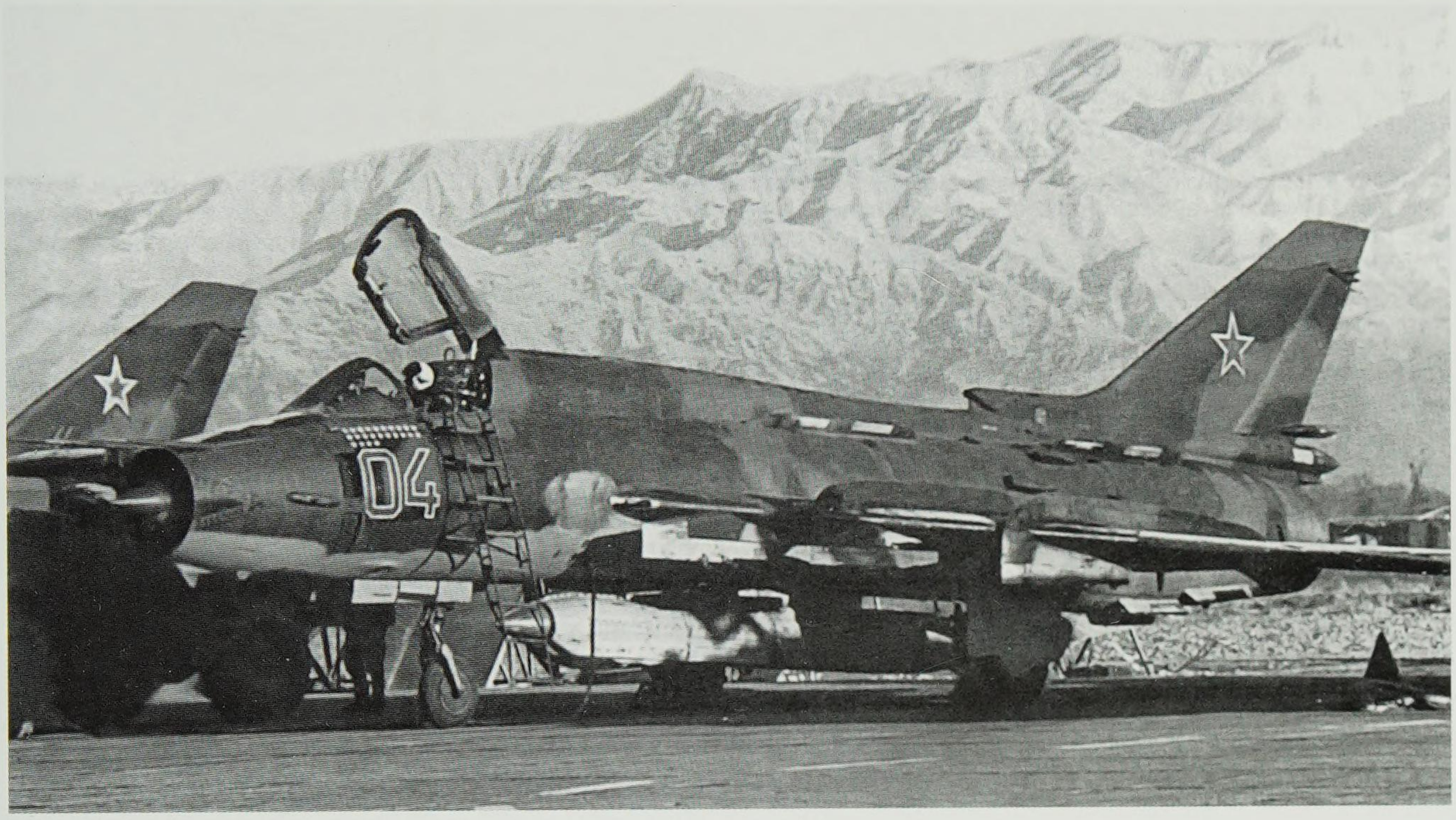
Almost the entire arsenal of weapons available to the Su-25 was used in Afghanistan. Thus, for example, 100- and 250-kg (220- and 550-lb) bombs were used most often over rel-

263rd ORAE personnel discuss matters in front of Su-17M4R '06 Blue' sporting 30 mission markers.

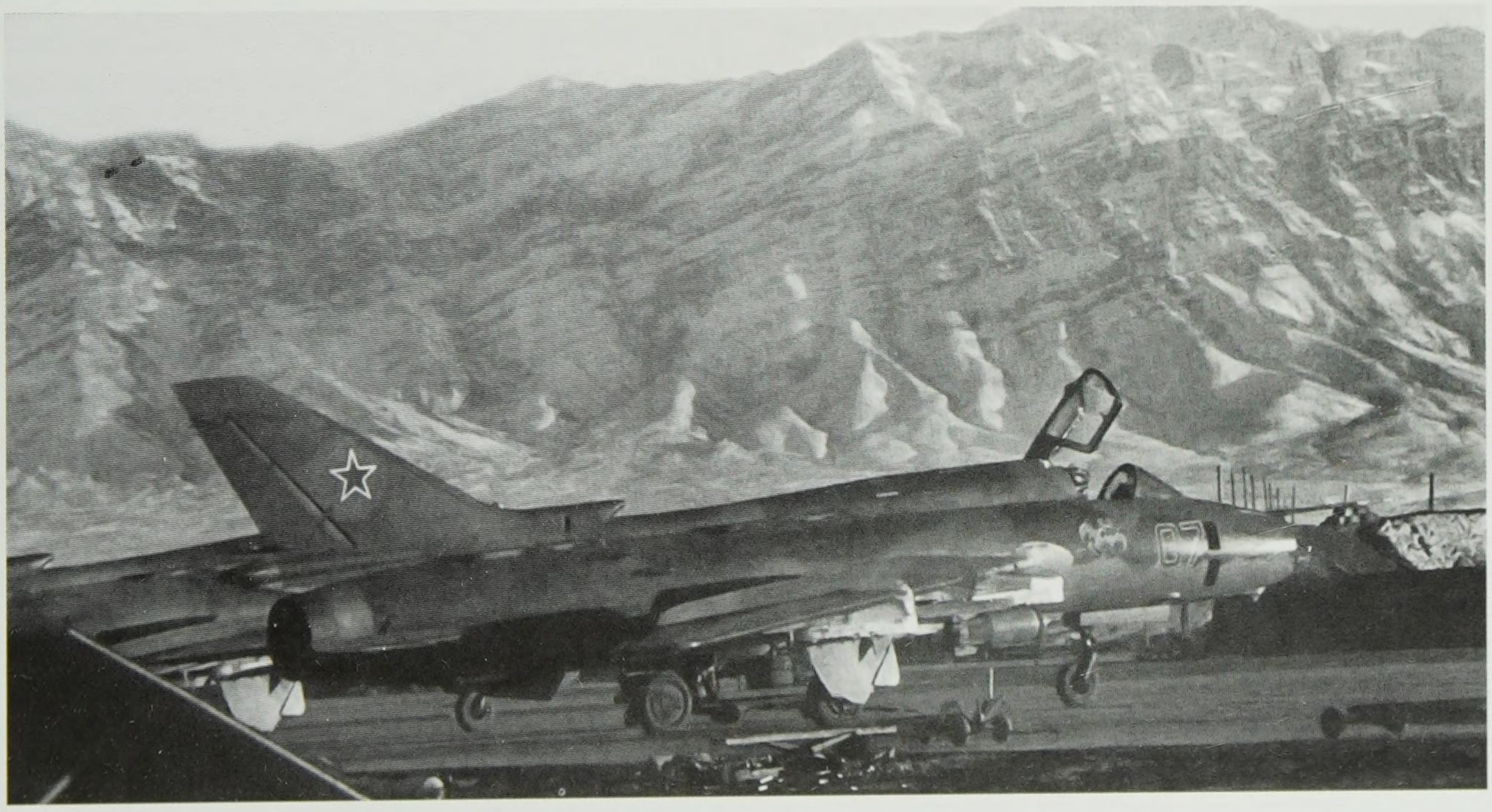
atively flat terrain, along with 57-mm S-5M and S-5MO rockets carried in 32-shot UB-32 pods. Usually, two or three attacks were made on the target, with 8-12 rockets released in each attack. However, with a weapons load the aircraft's performance naturally deteriorated; for example, when carrying four UB-32 FFAR pods, the Su-25 did not handle well and had a tendency to 'sink' when coming out of a diving attack, losing altitude and speed.

Small-calibre S-5 unguided rockets gradually gave way to more powerful S-8 FFARs, which were widely used in various versions. Another very effective weapon was the ODAB-500P FAE bomb, which was three times more powerful than a HE/fragmentation bomb of the same calibre in terms of blast effect. (ODAB = *ob'**yom**no-deto**nee**ruyushchaya **a**via**bom**ba* – 'volume detonating bomb, from the fact that the given volume of FAE is detonated after dispersal from the core of the bomb.)

The 240-mm S-24 heavy unguided rocket was also used very successfully in Afghanistan, demonstrating high accuracy; its HE/fragmentation warhead proved effective against a wide range of targets. The accuracy of the rocket from a height of 2,000 m (6,500 ft) was, typically, being able to place a salvo in a circle of 7-8 m (23-26 ft) diameter. The aircraft's GSh-2-30 cannon was generally used against machine gun 'nests' and vehicles, where its high rate of fire was devastating. The operations manual for the cannon recommended short bursts of around one second, loosing off around 50 armour-piercing or



263rd ORAE Su-17M4R '04 Blue' prepares to depart Bagram on its 25th sortie, with the Hindu Kush mountains as a backdrop. The aircraft has been retrofitted with the maximum number (12) of ASO-2V chaff/flare dispensers.



Apart from reconnaissance, the aircraft of the 263rd ORAE flew strike missions, as illustrated by this bombed-up Su-17M4R coded '07 Blue'. The 'hot and high' conditions limited the ordnance load severely; only two 250-kg bombs are suspended here.

HE/fragmentation shells, although pilots very often ignored the manual and tried to obliterate the target 'decisively' with long bursts. Most of the sorties were flown with two PTB-800 drop tanks in order to extend the Su-25's endurance.

The Su-25's ASP-17BTs-8 automatic gunsight earned a good reputation when used against targets in flat terrain, and was used to aim the cannon, rockets and bombs. Though it gave very good results over flat terrain, in the mountains its effectiveness deteriorated. This was because the abrupt changes of height and complex terrain features prevented the sight's computer from carrying out an accurate firing solution and pilots had to use it more like a collimating gunsight when firing the gun and had to release bombs using the 'Mark 1 eyeball' technique.

The survivability features designed into the aircraft proved to be highly effective; the well thought-out armour protection of vital systems and the cockpit frequently allowed the Su-25 to return to base with numerous significant hits from anti-aircraft artillery. The cockpit built as a welded 'bathtub' of titanium armour and the bulletproof windscreen prevented damage from small arms fire. There are cases on record of shells and bullets severing control rods for the control surfaces and engines or putting the hydraulic system completely out of action, but the pilots were still able to nurse their aircraft back to base. A team of engineers from the Tbilisi aircraft factory was permanently stationed with the 200th OShAE at Shindand, along with engineers from the Sukhoi OKB, who were there to monitor the aircraft's initial operational debut. In the first 15 months of operations in Afghanistan, the Su-25s of the 200th OShAE carried out more than 2,000 sorties without losing a single aircraft in combat.

The first loss of a Su-25 in Afghanistan actually occurred on 14th December 1981 – the pilot exceeded the permitted diving speed during an attack as a result of on a target and crashed fatally. According to some sources, the cause was acknowledged to be his exceeding the speed limit, but other sources claim the crash resulted from asymmetrical release of the bomb load, causing the aircraft to lose control. Evidently there was insufficient aileron authority to counter the resulting roll and the aircraft hit a cliffside. Another Su-25 was lost as a result of the ground engineers forgetting to re-charge the hydraulic accumulator and the pilot was unable to retract the undercarriage after take-off. Slowed down by the drag of the extended undercarriage, the heavily loaded aircraft stalled, but the pilot managed to eject.

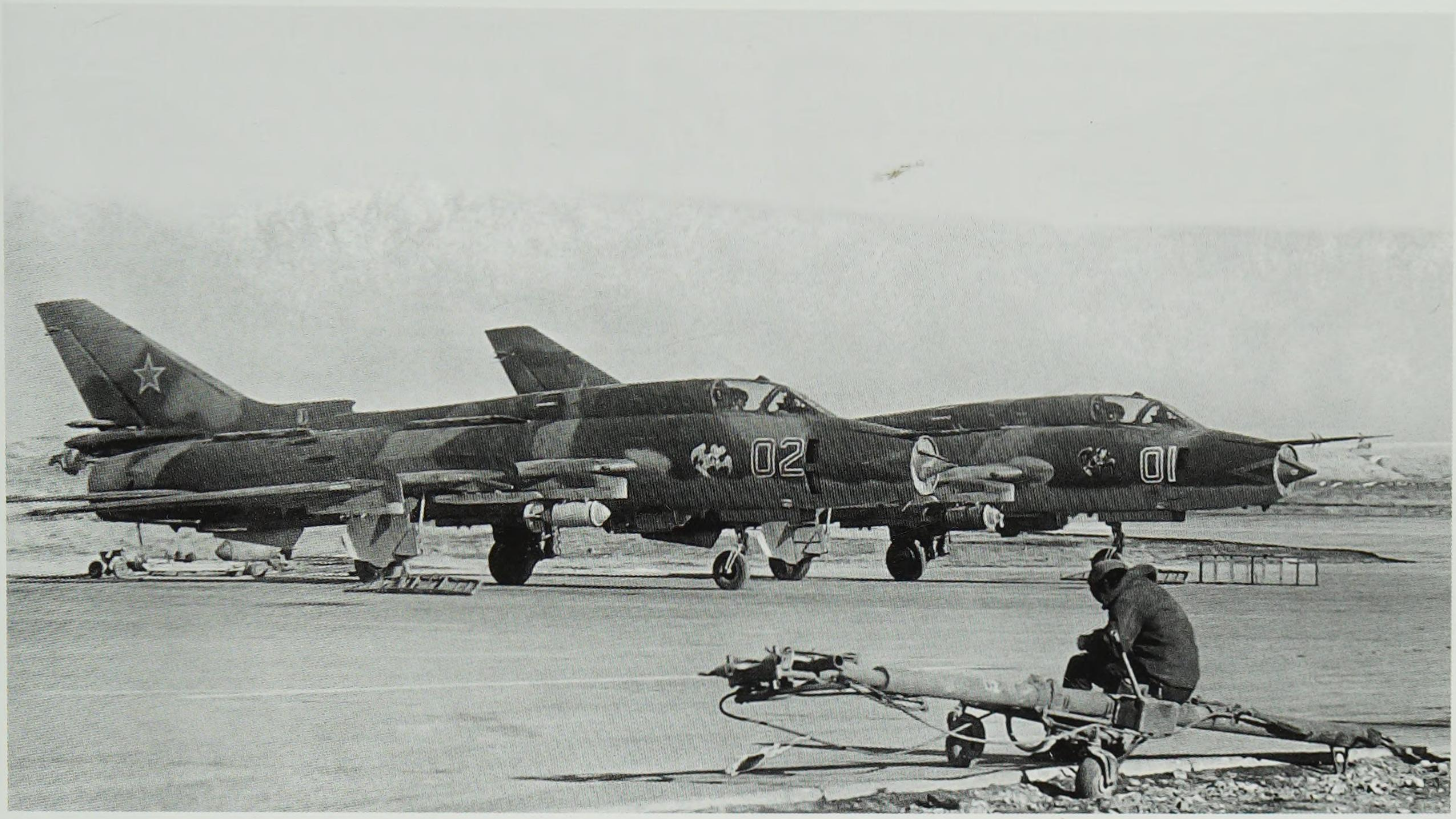
A considerable amount of damage to the Su-25 was caused by heavy landings, which themselves were the result of having to employ an evasive technique, involving the aircraft landing with a high sink rate to avoid the threat posed by MANPADS. The aircraft would land with minimum fuel and without using flaps or airbrakes – sometimes bursting tyres or even losing an entire undercarriage leg if the landing was particularly heavy. For example, on 4th October 1988 a Su-25 undershot while landing at Bagram, hit the elevated threshold of the concrete runway and sliced off all three undercarriage legs, slithering on its belly in a shower of sparks. The pilot walked away without a scratch.

Among the Su-25's deficiencies was the difficulty of arming the aircraft. For example, it took two men 40 minutes to reload the cannon and they had to kneel during this time, feeding the heavy ammunition belt into the magazine above their heads. Also, initially there were no powered bomb lifts, forcing technicians and armourers preparing the Su-25 to push ordnance to the aircraft on hand trolleys. A number of defects were eliminated on later batches of *Frogfeet* and, as a result of the type's operational debut in Afghanistan, the Sukhoi Design Bureau incorporated several modifications designed to simplify and speed up maintenance and preparation for flight.

In late October 1982 the 200th OShAE had a changeover of aircrew and ground personnel, which came from another squadron of the 80th OShAP. This was when the Su-25 gained its famous nickname Grach (Rook) derived from its usual radio callsign, which gave rise to distinctive nose art perpetuated on many *Frogfeet*.

The Soviet ground forces had great respect for the aircraft, without the support of which it would have been impossible to conduct certain military operations in Afghanistan. Indeed, motor rifle and airborne forces units would only conduct operations if there was air support from the Su-25.

Even during the course of the early operations against the Mujahideen in Afghanistan, the Soviet Army realised that it was unable to defeat the rebel units and it became obvious that the 34th Composite Air Corps supporting the OKSV would have to be reinforced. A year

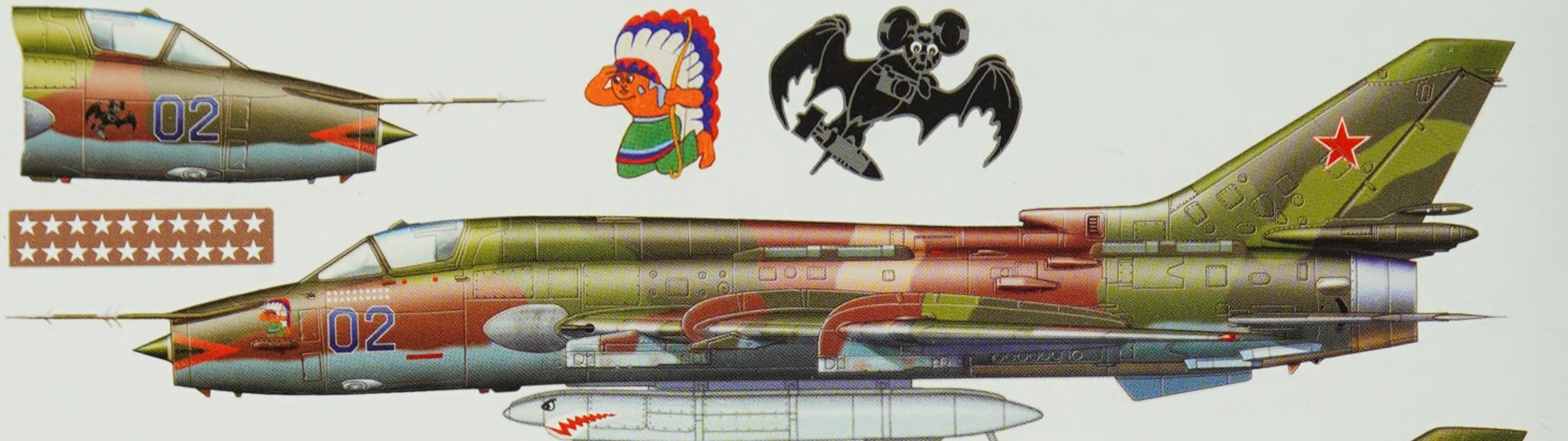


263rd ORAE Su-17M4Rs '01 Blue' and '02 Blue' on QRA duty at Bagram sport two different versions of the 'BomBat' badge.

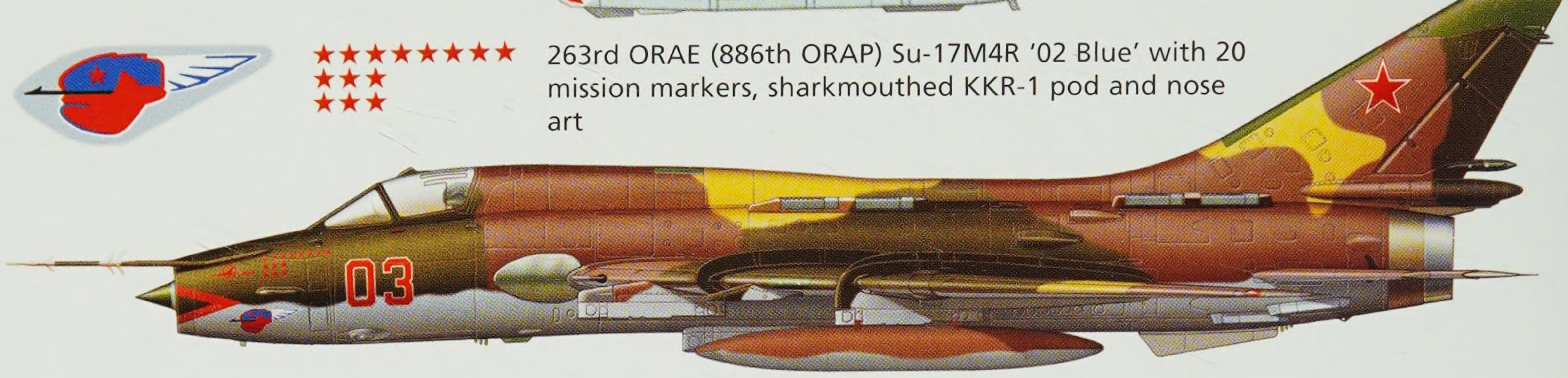
after the changeover of pilots and ground crew, yet another squadron under the command of Major Khanarin arrived to take over the task of combating the Afghan rebel forces. Thus, squadrons from the 80th OShAP at Sital-Chai, providing aircraft and personnel on a rotational basis, fought in Afghanistan up to September 1984. Then a new Su-25 regiment was formed, drawing personnel from the 80th OShAP and another regiment, the 90th OShAP, which had been set up at Artsyz in the Ukraine. The new regiment became the 378th OShAP commanded by Lt.-Col. A. Bakushev and was the first such regiment to be deployed in full strength outside the borders of the Soviet Union. Two of the regiment's squadrons were deployed at Bagram and the third squadron was deployed to Kandahar.

If necessary, the Su-25s were re-deployed close to their designated area of operations, and as well as operating out of Kabul Airport, they also flew from packed earth runways at Mazar-e-Sharif and Kunduz in the north of the country. These airfields had to be brought up to a suitable operating standard by providing hardstands paved with perforated steel planking (PSP), hundreds of tons of which were brought to the bases. Over time, some of the

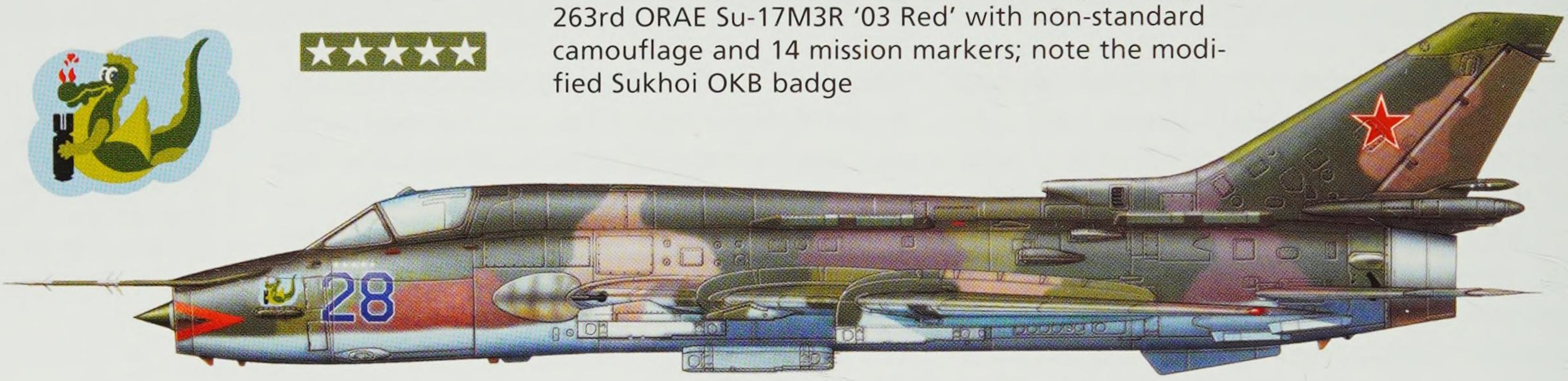
Su-17M4Rs '04 Blue' (with a KKR-1 pod) and '11 Blue' on the flight line at Bagram.



263rd ORAE (886th ORAP) Su-17M4R '02 Blue' with 20 mission markers, sharkmouthed KKR-1 pod and nose art



263rd ORAE Su-17M3R '03 Red' with non-standard camouflage and 14 mission markers; note the modified Sukhoi OKB badge



274th APIB Su-17M4 '28 Blue' adorned with a bomb-toting dragon, Bagram.

assault tasks were taken over by Army Aviation Mi-8s and Mi-24s and the Su-25 was assigned the task of providing air cover from 'standing air patrols', in case they were needed to assist the helicopters at any point. Forward air controllers were used very effectively in Afghanistan and they not only guided the Su-25s onto their targets, but also carried out BDA and evaluated the performance of given weapons used in the attacks. In the opinion of the FAC teams, a single Su-25 achieved greater success than several fighter-bombers assigned to similar targets.

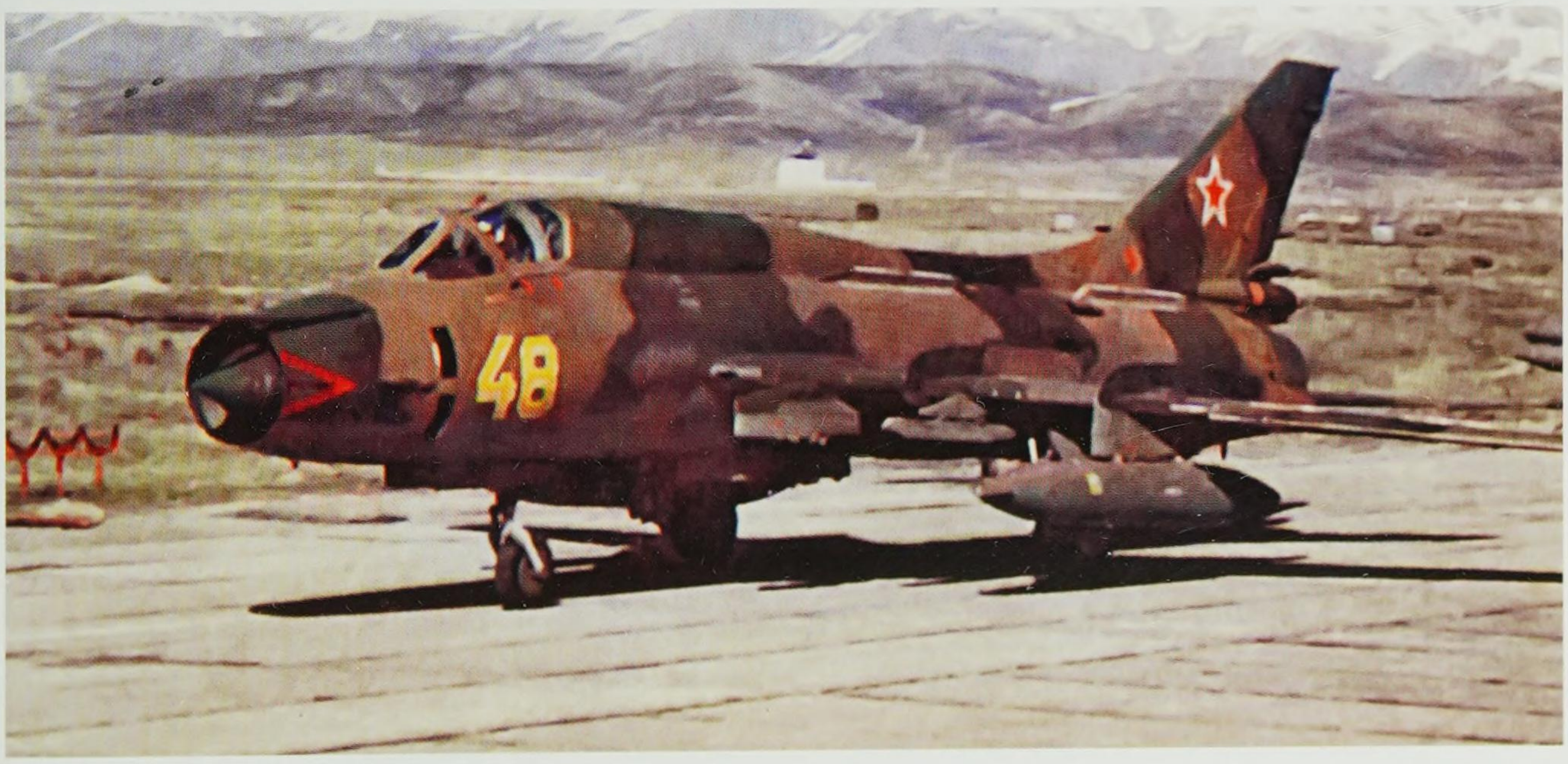
Joint operations by helicopters and Su-25s turned out to be a particularly effective combat technique, where the helicopter crews were able to study the terrain from low altitude and at relatively low speed in the area of an intended strike. Initially, a pair of Mi-8s would circle over the target, carrying out a preliminary reconnaissance of the area and reveal the location of the enemy groups by firing off signal flares or a burst of tracer fire, after which two to four Su-25s would come in to knock out any anti-aircraft artillery (AAA) positions. This would be followed by a pair of Mi-24s which would come in to 'clean up' the area for a strike group of one or two flights of Su-25s and attack helicopters. A typical joint helicopter/Su-25 operation took place on 2nd February 1983, during a retaliatory operation near Mazar-e-Sharif, where Soviet civilian specialists working at a nitrogen fertiliser plant had been captured and murdered. Four Su-25s were assigned to wipe out the Mujahideen group responsible, along with a flight of Mi-24s and six supporting Mi-8s. The Su-25s destroyed the main force of the enemy group, using ODAB-500P fuel-air explosives and ordinary HE bombs, plus 80-mm S-8 rockets, whilst the helicopters were used to ensure that none of the rebel group was able to escape the onslaught.

The Su-25 was also used in Afghanistan for aerial mine-laying, carrying two or four KMGU dispenser pods, each loaded with 24 POM anti-personnel mines or PFM fragmentation mines. Aerial mine-laying was carried out at a speed of 700-750kph (378-405kts) and a height of 900-1,000 m (2,950-3,280 ft), although for a more dense distribution of the mines, the height was often reduced to 300-500 m (985-1,640 ft). In 1984, the Su-25 was responsible for 80% of all aerial mine-laying sorties.

The Su-25 was also used on 'free chase' missions. The actual area of operation would be briefed to the pilots from reconnaissance data analysed and prepared in the HQ of the 40th Army. When the Su-25 was assigned a 'free chase' task it was usual to carry a pair of UB-32 or B-8M FFAR pods and two 250-kg (550-lb) or 500-kg (1,100-lb) free-fall bombs. Starting in the autumn of 1985, 'free chase' missions were also flown at night, even though the *Frogfoot* had no special equipment for night missions. Mujahideen vehicle convoys revealed themselves by the beams of their headlights which served as targets for the Su-25. Often pilots on 'free chase' missions would not actually hit the vehicles themselves but drop HE bombs on the mountainsides to cause a landslide. With the convoy halted in this way, it was then easy to pick off the targets with greater accuracy. However, such missions also required particular concentration on the part of the pilots, in order not to fly into the mountainside itself and there was at least one such incident in 1985.

From the spring of 1985 the Su-25 was used for standing patrols over Kabul Airport and the HQ of the 40th Army, in an attempt to counter artillery and rocket attacks on the city and the Soviet units in the area. A pair of Su-25s was kept on ready alert at Bagram, mainly in order to strike at units of Ahmad Shah Massoud, the most powerful and respected Mujahideen leader at the time, held in high esteem by the Afghan population. So feared and hated by the occupying Soviet forces was Ahmad Shah Massoud that any pilot confirmed to have killed the Mujahideen leader had been promised an immediate award of the coveted Hero of the Soviet Union title. As the Mujahideen air defences became more effective with the acquisition of better MANPADS and heavy machine-guns, the Su-25 began to suffer more frequent serious damage from such attacks. One aircraft established something of a record when it returned from a sortie with 165 hits! Although the reliable defensive armour saved the pilot in many cases, AAA fire very often damaged the engines, fuel tanks, control rods and disabled various vital aircraft systems, although the aircraft was usually able to limp back to base. Nevertheless, aircraft were soon returned to operational service thanks to the Su-25's excellent 'repairability' and the fact that many components and systems were interchangeable.

In order to counter the enemy's increasing air defence capabilities, the Su-25 was compelled to use new types of weapons, combining high lethality with great accuracy, capable of being used without entering the enemy air defences' kill zone. One response was to start using B-13L FFAR pods loaded with 130-mm S-13-OF unguided rockets with high-explosive fragmentation warheads, a range of up to 4 km (2.49 miles) and the ability to penetrate earth reinforcements, covered with rocks, to a depth of 3 m (10 ft). Even more powerful 330-mm S-25-OF and S-25-OFM unguided rockets were added to the Su-25's arsenal, with a warhead weight of up to 200 kg (440 lb). Sometimes, in operations against concentra-



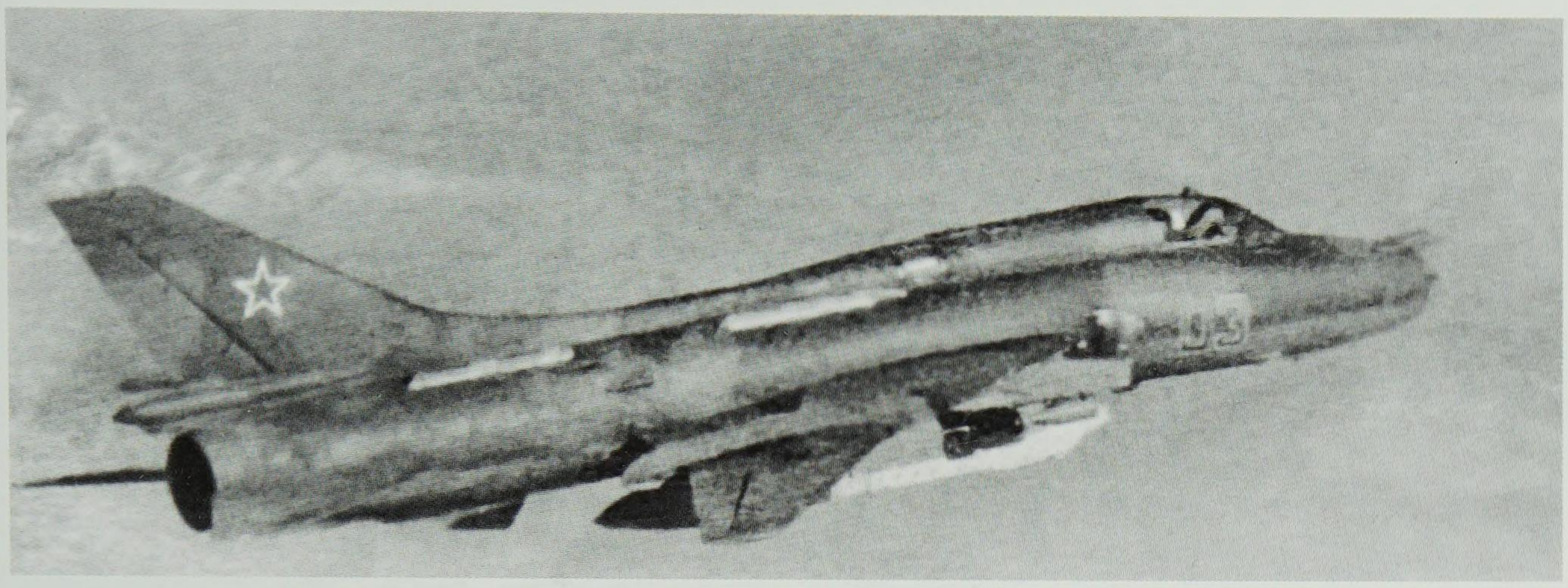
Su-17M3 '48 Yellow', one of many assigned to the 40th Army, at an Afghan airbase. Note the addition of ASO-2V chaff/flare dispensers for protection against MANPADS.

A Su-17M4 cruising over the featureless 'moonscape' of Afghanistan which made navigation rather difficult.

tions of Mujahideen personnel, SPPU-22-01 gun pods with depressible GSh-23 twin-barrel cannons were used by the Su-25. In one operation, in April 1986, four Su-25s supporting a heliborne assault landing at Dzhavar used SPPUs to 'clean up' the area for the approaching helicopters, none of which was lost to Mujahideen ground fire.

The first live combat use of air-to-surface missiles by the Su-25 was also recorded in April 1986 when Lt Col Aleksandr V Rutskoi, the then CO of 378th OShAP, and one of his

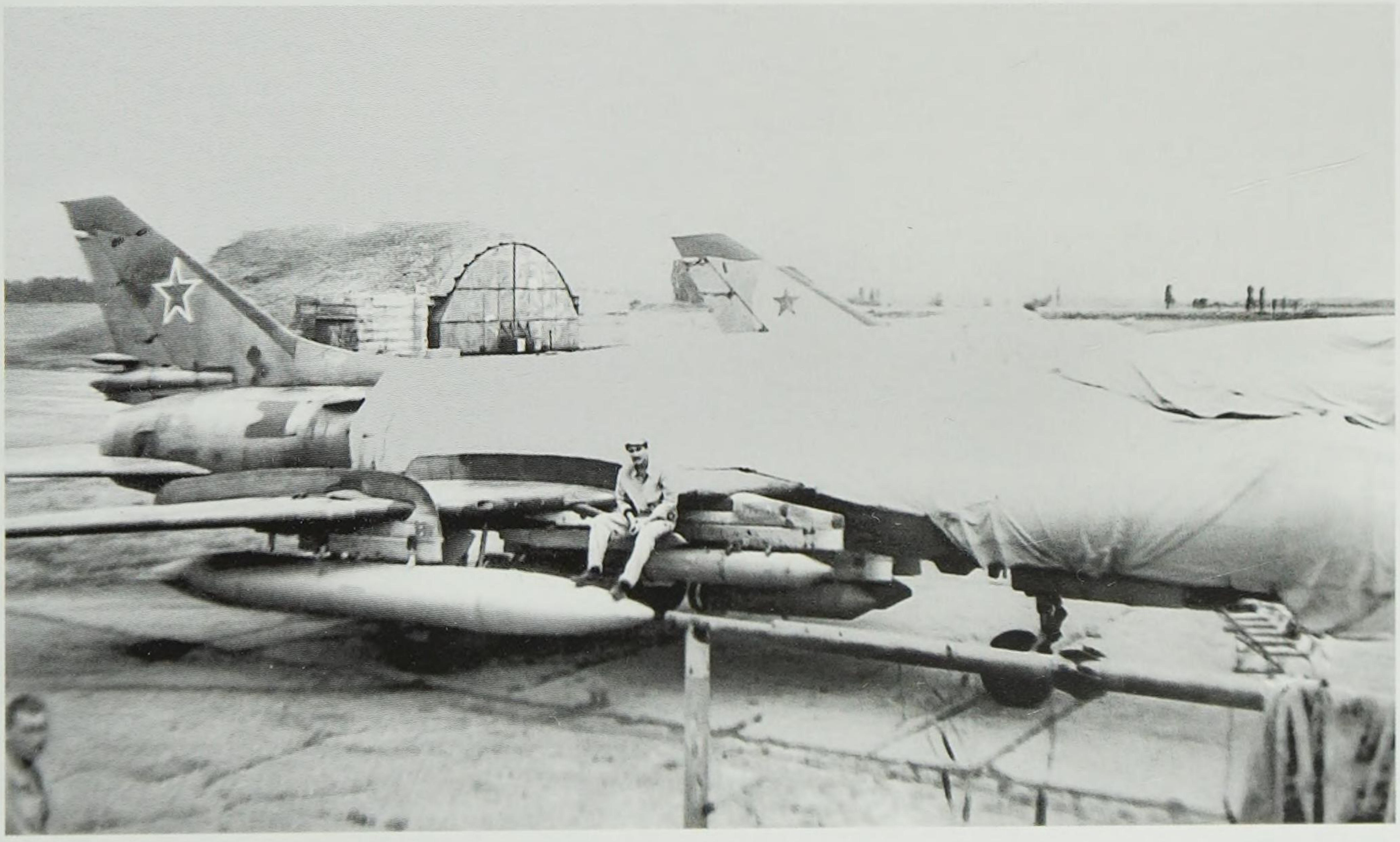
A Su-17M4 carrying drop tanks is seen through the sight of a sister aircraft as the pair flies over thick overcast.



'03 Red', a 263rd Independent Recce Air Squadron Su-17M3R with eight ASO-2Vs, on a sortie over Afghanistan.

squadron commanders, Maj. Vysotsky, launched Kh-23 (AS-7 *Kerry*) ASMs against Mujahideen targets. This radio command-guided missile did not prove to be too successful, since it was difficult for the pilot to find the target and then guide the missile onto it whilst simultaneously trying to carry out 'jinking' manoeuvres to avoid being hit by ground fire. The Kh-25ML (AS-10 *Karen*) and Kh-29L (AS-14 *Kedge*) laser-guided weapons were much more effective and the targets could be illuminated either by the aircraft's own Klyon-PS LRMTS or a wingman's LRMTS. However, the best results were obtained by working with a forward air controller. Initially, ground-based laser target designators were mounted on vehicles in a rather improvised fashion, but later a specialised vehicle was designed for the job. This was based on the successful BTR-80 armoured personnel carrier and designated BOMAN (*boye***va***ya ma***shin***a* ***a****viana***vod***chika*), literally 'forward air controller combat vehicle'. The BOMAN has sophisticated land inertial navigation and communication systems, adding R-862 and other aircraft radios to facilitate communication between the FAC team and the aircraft, whilst retaining standard troop radios to communicate with reconnaissance platoons on the ground. The sighting optics and laser designator equipment is installed inside the vehicle and only exposed when required for use.

The accuracy of laser-guided missiles was very high and the heavy Kh-29L was a particularly effective weapon thanks to its 317-kg (700-lb) warhead. Also used with great effect was the simpler 330-mm S-25L – an S-25-OFM unguided rocket modified by adding a guidance unit identical to that of the Kh-25ML and Kh-29L. The S-25L was normally launched from a distance of 4-5 km (2.48-3.1 miles) in a shallow dive (25-30°) and the circular error probable usually did not exceed 1.5-2 m (5-6.5 ft). According to data collated by the Sukhoi Design Bureau, a total of 139 air-to-surface missiles were launched by all types of Soviet



A pair of Su-17M3s on ready alert, with canvas covers protecting against the sand and dust. The nearest aircraft carries six OFAB-250ShN parachute-retarded bombs and two PTB-1150 drop tanks.

fighter-bombers during the Afghan War, 137 of which hit their targets.

Sometimes the Su-25 was also used for reconnaissance missions, even though it did not have any special equipment and such operations were carried out on a purely visual basis. However, at the personal behest of one of the most famous Su-25 pilots of the Afghan campaign, Lt.-Col. Aleksandr V. Rutskoi, at least one Su-25 was adapted for BDA tasks, carrying an improvised camera pod.

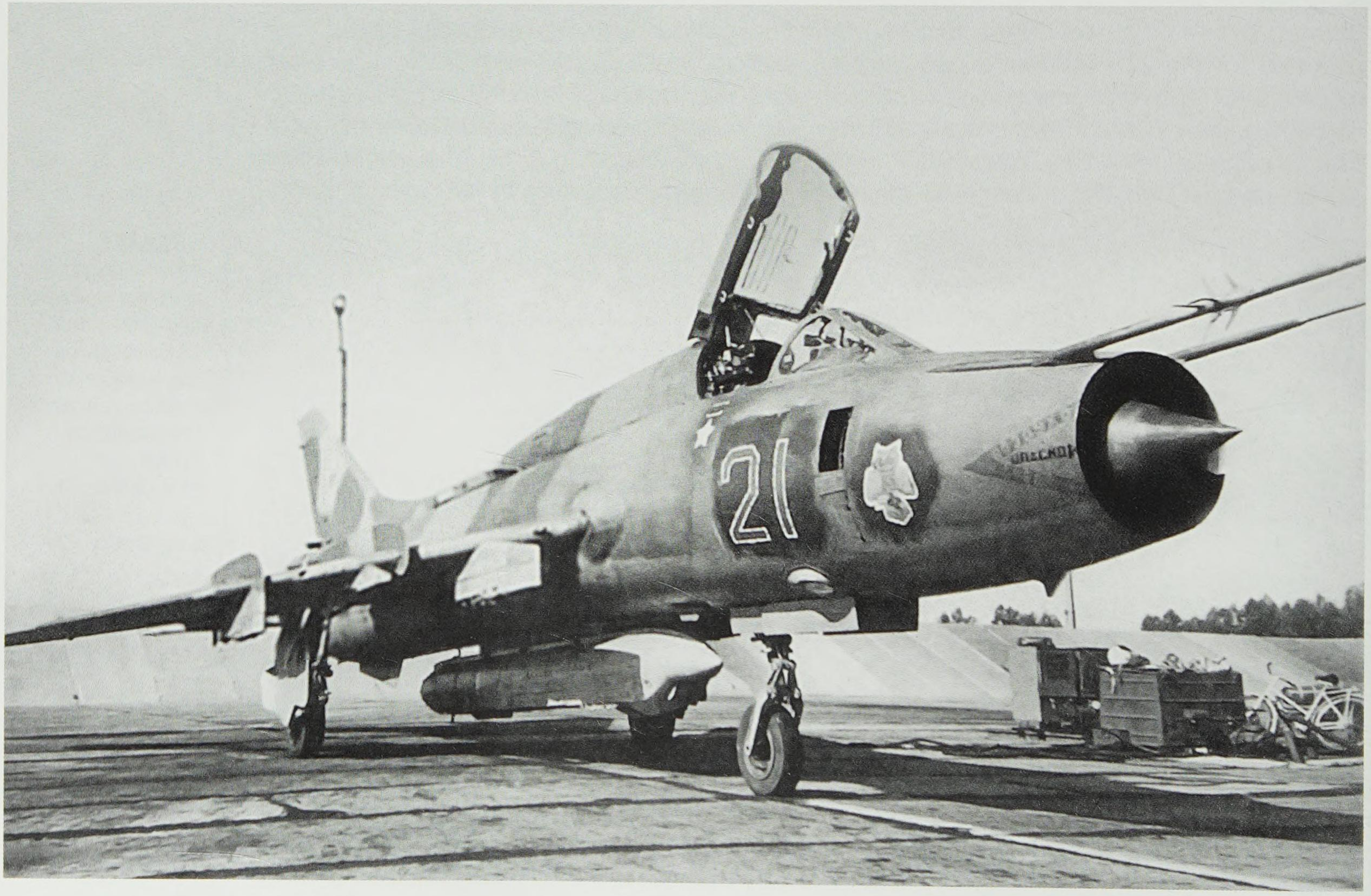
As a consequence of the aircraft's ability to perform a wide variety of tasks, the *Frogfoot* was used extremely intensively in Afghanistan and Su-25 pilots often had considerably more flying hours on type than their colleagues flying the Su-17, MiG-23 and MiG-27. On average, the *Frogfoot* performed around 500 combat sorties per year, although some examples even recorded as many as 900 to 950 sorties annually. Aircraft with such high airframe usage were usually returned to the USSR when their pilots completed their Afghan tour.

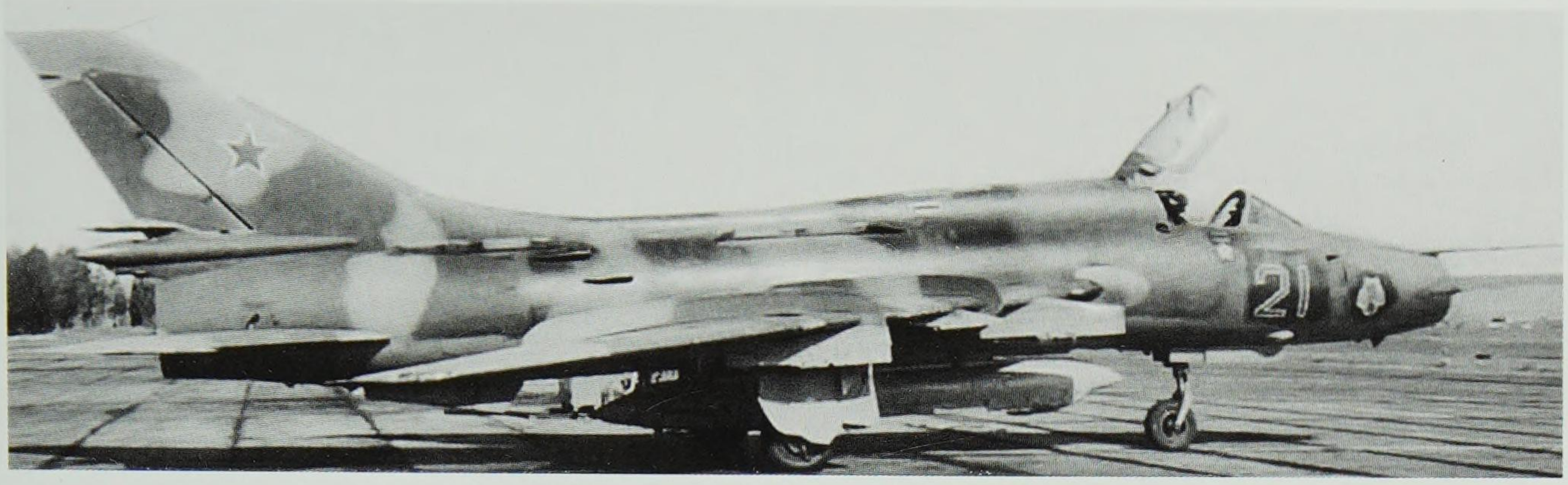
When the Mujahideen began to acquire more and better MANPADS, the combat attrition statistics also began to worsen. The first Su-25 loss to a surface-to-air missile occurred on 16th January 1984. The aircraft was initially hit by missile fragments which damaged an engine and the control rods; the aircraft started to lose height, compelling the pilot to eject, but with insufficient height his ejection was unsuccessful and he was killed.

Within a week after the Stinger's appearance in Afghanistan in November 1986, four Su-25s were shot down, killing two of the pilots. Later, on 21st January 1987, a Su-25 piloted by Lt (SG) Konstantin Pavlyuk was shot down by a Stinger just after getting airborne out of Bagram airfield. The pilot was able to eject, albeit sustaining slight injuries when he landed in a tree, but CSAR helicopters were unable to locate him immediately. The injured pilot was then surrounded by Mujahideen and he started to fight them off with his personal weapons. When all his ammunition ran out he enticed the band of Mujahideen closer and when surrounded by six of them he detonated a hand grenade, blowing himself up and killing all six guerrillas in an act of selfless and exemplary heroism. By September 1987, *Frogfoot* losses amounted to a whole squadron's worth of aircraft.

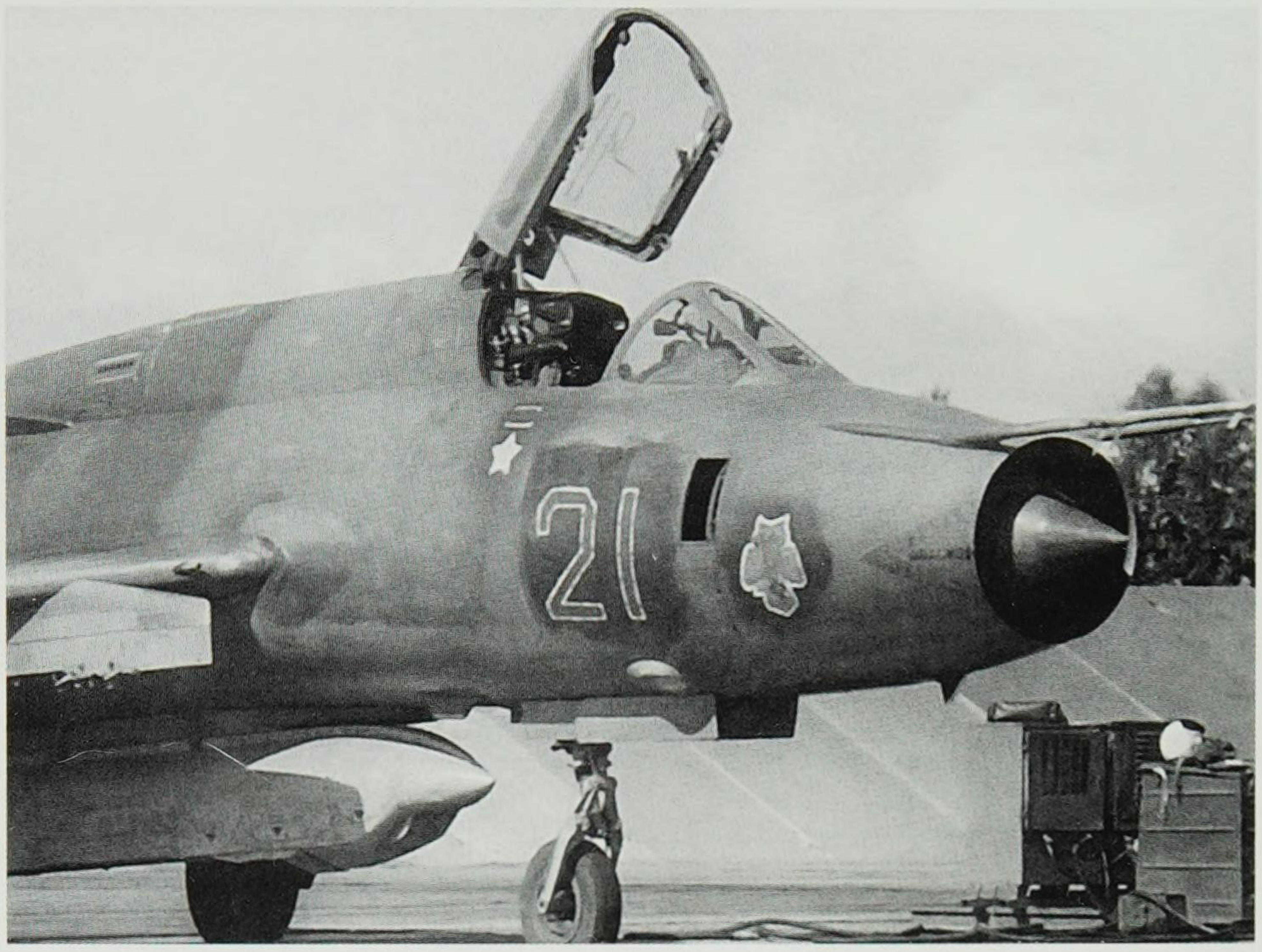
Still, the Su-25's survivability was amazing. There was a curious incident when a Su-25 returned to base with an unexploded missile, which had scored a direct hit, protruding from one of the engine nacelles. On another occa-

Su-17M3R '21 Red' (originally '01 Red'), a 313th ORAP aircraft, was named in memory of Lt (SG) Sergey Pantelyuk, a 263rd ORAE pilot shot down on 27th October 1987 and subsequently killed by the Mujahideen. The name was on the port side only. Later, when this aircraft was repainted and recoded '30 Red', the name appeared on both sides of the nose but the owl nose art was not restored.





Another view of Su-17M3R '21 Red' seen after its Afghan tour.



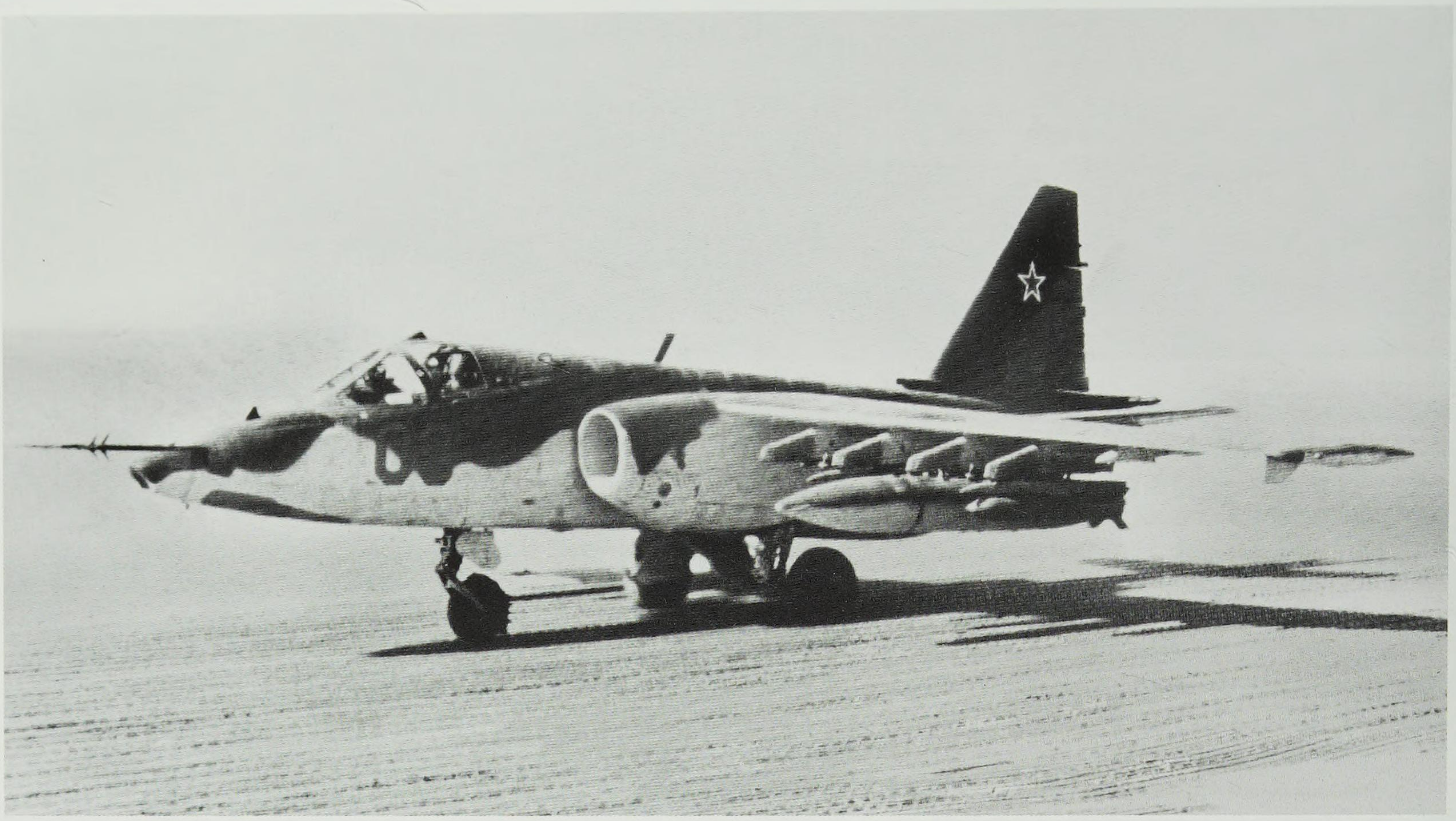
In Afghanistan the aircraft had worn the code '01 Red' while on assignment to the 263rd ORAE; note the dark patch where the previous code has been overpainted. The 263rd ORAE badge (an owl clutching a camera and a gift-wrapped bomb) is likewise on a patch of darker colour but this is part of the original background colour, not fresh paint.

sion, on 28th July 1987, a Su-25 returned from a sortie with a gaping hole in the fuselage side where a missile had destroyed one of the engines and almost completely burned through the elevator control rods. The fire continued to rage throughout the entire approach phase, but the pilot was able to land the aircraft successfully. An even more remarkable escape was recorded by Lt P. Golubtsov, whose Su-25 had half its tail section blown off by a Stinger, although the engines continued to run normally. After touchdown, the aircraft overran the runway with brake failure, directly into the defensive minefield designed to thwart Mujahideen sabotage attacks on the airfield. There the pilot had to wait until a platoon of sappers could reach him and release him from the aircraft! One of the most amazing incidents involving a Su-25 pilot was that experienced by Lt.-Col. Aleksandr V. Rutskoi in April 1986 when he was shot down by a surface-to-air missile which entered the port engine's air intake, destroying the engine and causing the starboard engine to surge. Missile and structural fragments also damaged the control rods, making the aircraft barely controllable. The Su-25 was finished off by a burst of AAA fire and Rutskoi barely managed to eject at the last moment. In the ensuing hard landing he sustained serious injuries. Later, following his recovery and in defiance of his doctors' wishes, Rutskoi returned to Afghanistan as the Deputy Commander of the 40th Army's aviation component, resuming his flying career – once again as a Su-25 pilot.

Vladimir P. Babak, the Su-25's project chief, visited Afghanistan several times to observe the aircraft in its combat environment. These visits, and inspection of battle-damaged Su-25s, led the Sukhoi Design Bureau to come up with a whole raft of measures enhancing combat survivability. Cockpit armour was enhanced; 5-mm ($0\frac{13}{64}$ in) steel plates and glassfibre mats were installed in the engine bays to isolate a damaged engine from the good one and prevent the spread of a fire. The titanium push-pull rods in the control system were replaced by steel ones, the fuel system and the fire suppression system were revised, and additional cooling air scoops were installed to reduce the engines' heat signature. Deliveries of Su-25s with these survivability features, which increased overall weight by 1,100 kg (2,425 lb), to the 378th OShAP began in August 1987, although an order was issued at the end of 1986, forbidding pilots to descend below 4,500 m (14,800ft) in order to avoid being hit by MANPADS.

At first the Su-25 was equipped with four ASO-2V IRCM flare dispensers. However, the pilots rarely used the flares, as selecting the release sequence was too much of a distraction at the crucial point of the attack; besides, when a pilot detected a missile launch it was too late to release flares anyway. Since the standard complement of flares proved to be insufficient, a local modification was made to fit four more ASO-2V dispensers to the engine nacelles, and the flare launch sequence was made automatic.

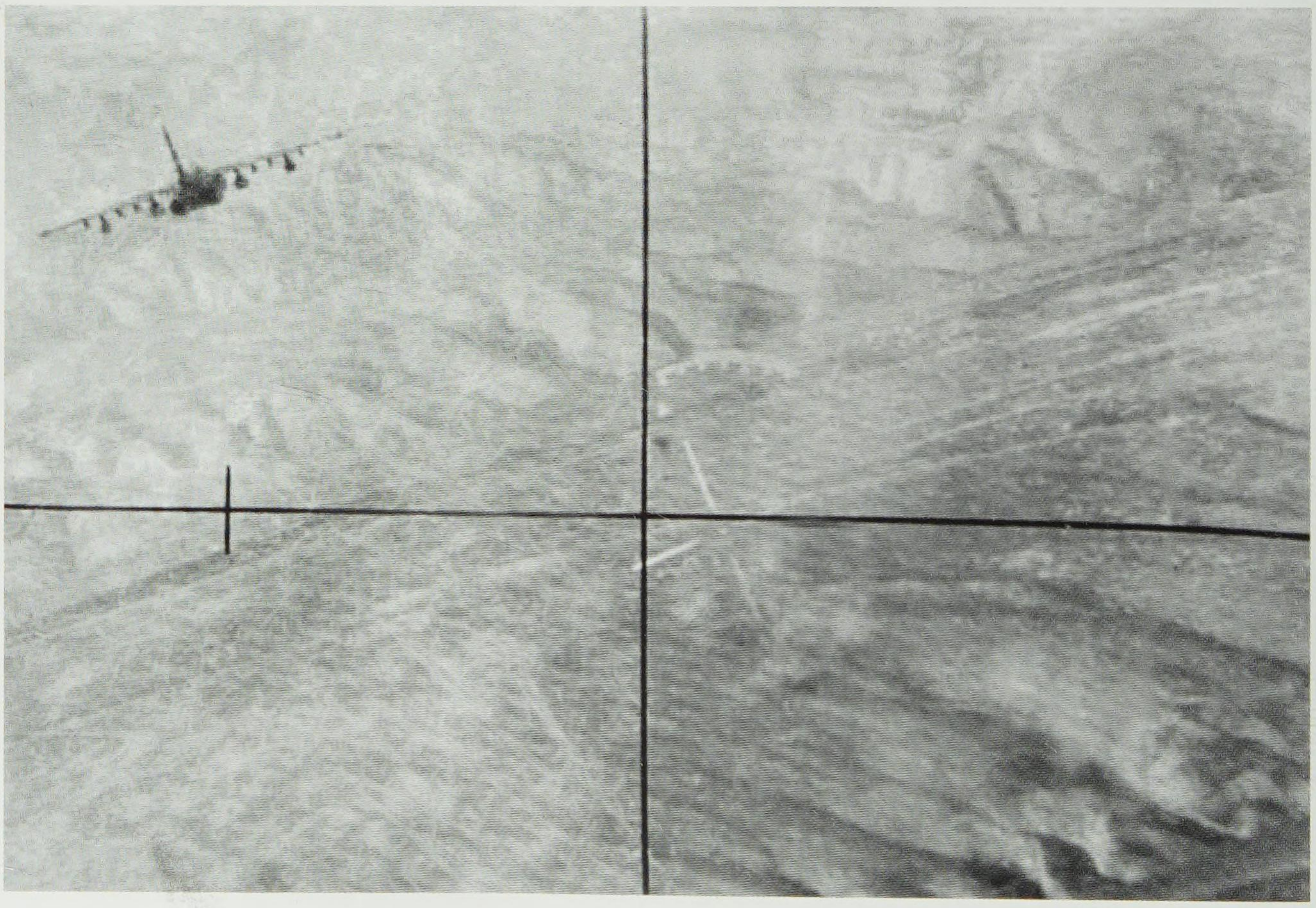
In an attempt to reduce losses to MANPADS, towards the end of the Afghan War the Su-25s were used more often for night operations. They were assisted in finding their tar-



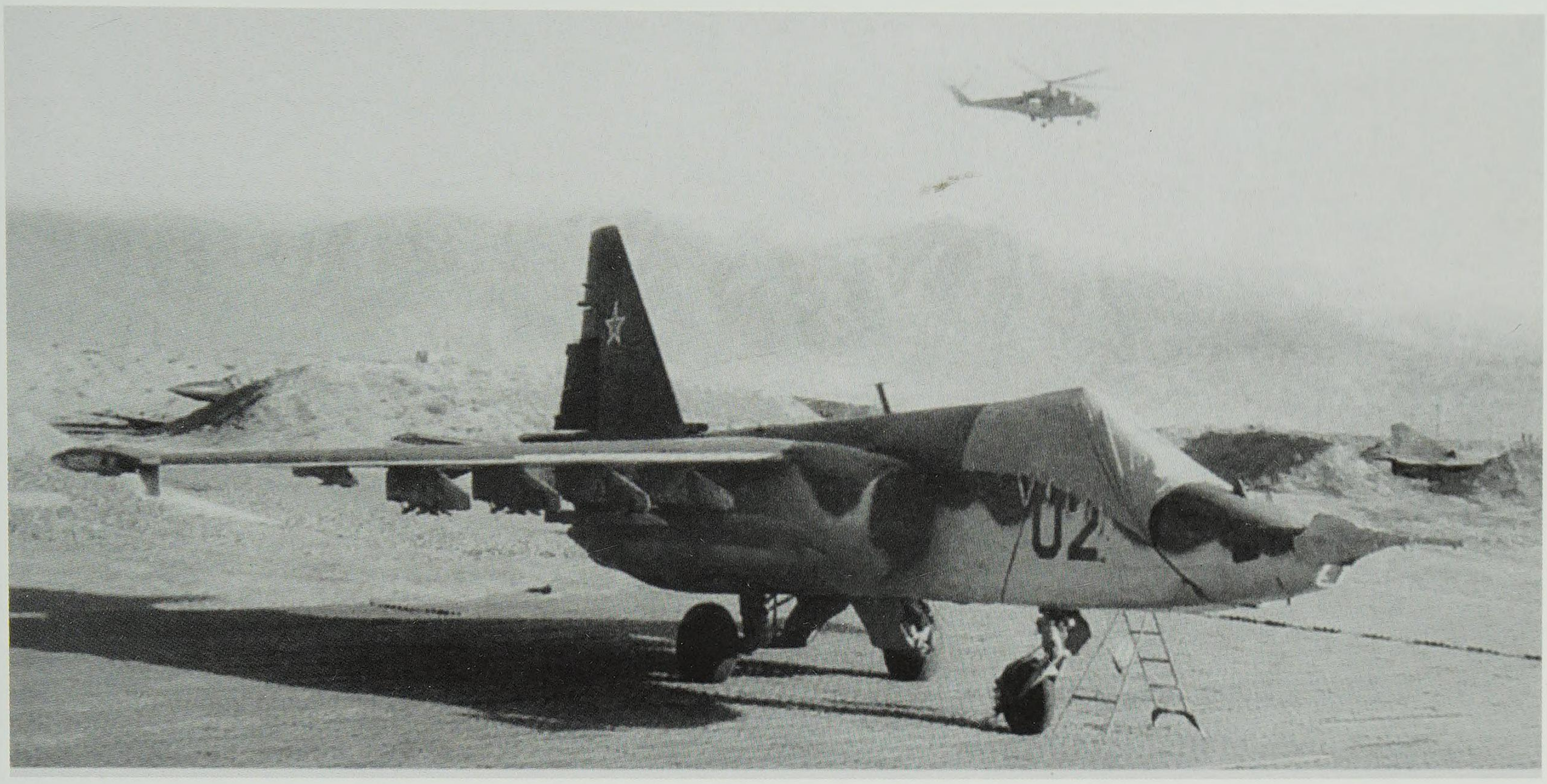
A Su-25 with two drop tanks and four S-24 rockets is ready for a sortie.

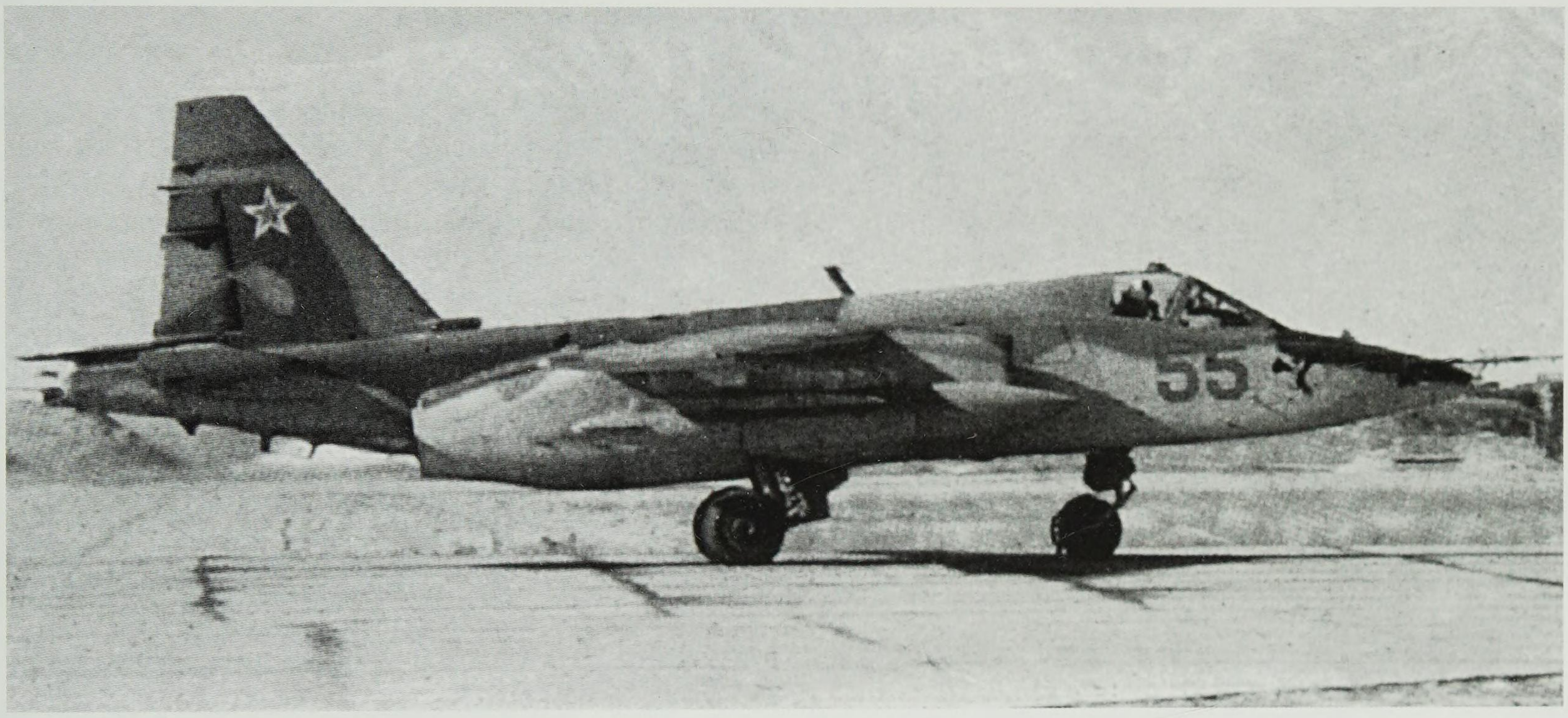
gets by Su-17s, which illuminated the area with flare bombs.

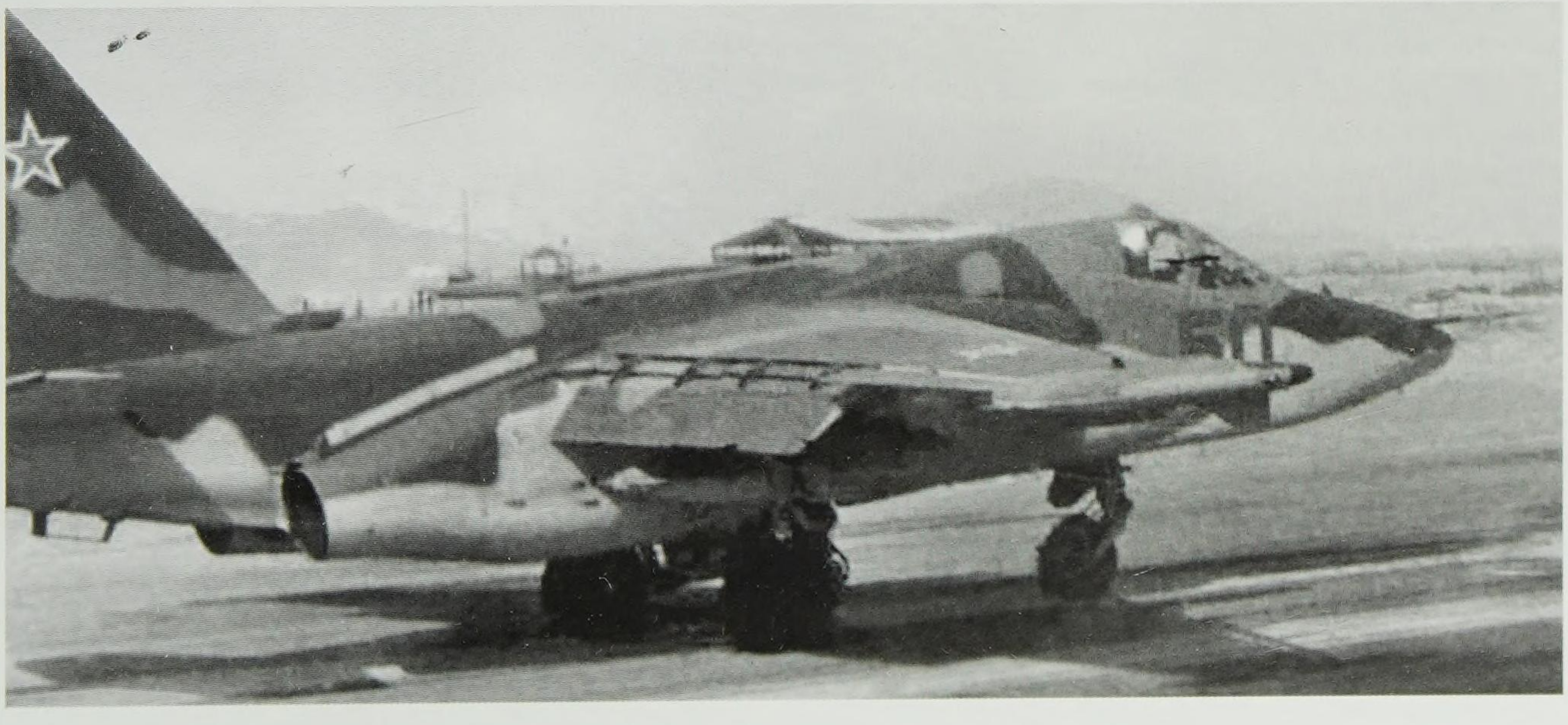
As the Soviet withdrawal from Afghanistan got under way, the Su-25s were relocated to Shindand and Bagram. Another Su-25 squadron was based at Kabul. One of their missions at this stage was that of protecting the troop convoys headed for the Soviet border and performing regular precautionary strikes along the exit routes. From 23rd January 1989, the Su-25 also took part in Operation *Taifoon* (Typhoon) with the objective of inflicting maximum losses on the Mujahideen in central and northern Afghanistan before the Soviet Army's final withdrawal. The Su-25 departed from their Afghan bases in the final days of January 1989.



Caught by the wingman's gun camera, a Su-25 armed with FFAR pods dives onto a target in Afghanistan. Smoke and debris from the previous strike can be seen rising at the bottom of the picture.

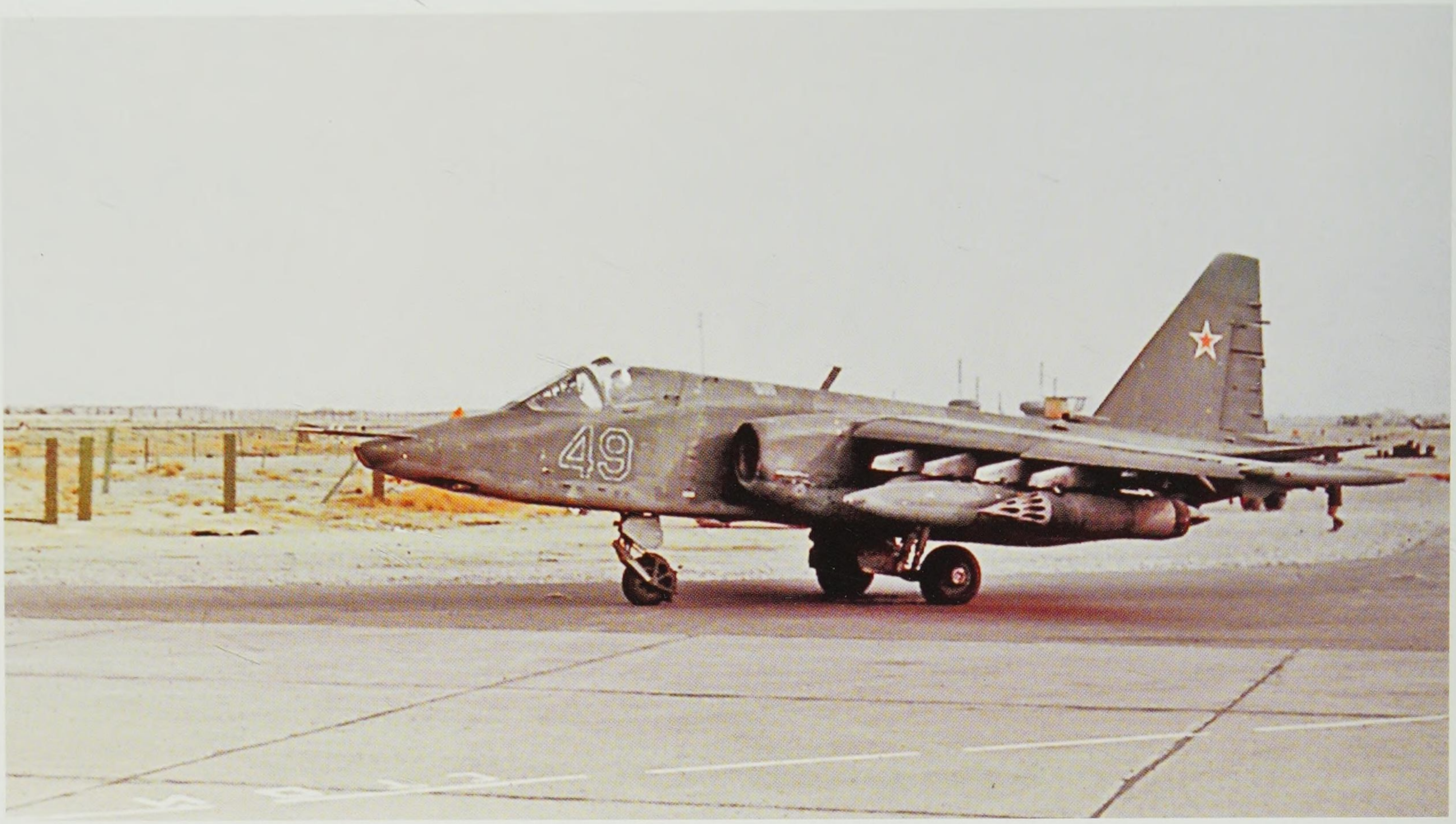






A Su-25 awaits the next mission at Bagram as a Mi-24 returns from a sortie.

Su-25s '55 Red' and '50 Red' are seen taxying at Bagram with a pair of drop tanks. The former machine carries the rook emblem that came into being at that time.



A Su-25 wearing a non-standard dark-bellied camouflage scheme and an equally unusual low-visibility tactical code ('49 White outline') taxies past the runway checkpoint at Maryy-2 AB in Turkmenistan. This airbase was also used by aircraft operating into Afghanistan during the Afghan War.

Summing up the Su-25's involvement in the Soviet campaign in Afghanistan, it may be noted that a total of 118 *Frogfeet* were assigned to the Afghan TO. Of these, 23 aircraft were lost for various reasons. The Su-25s flew a total of 60,000 sorties in the Afghan War, giving an average of 2,800 sorties per total loss, and the Su-25 required an average of 80-90 hits to bring it down. By this index of survivability the Su-25 considerably surpassed other Soviet combat aircraft (in comparison, the Su-17 sustained an average of 15-20 hits before succumbing to the damage), as well as that of American types during the Vietnam War.

The Su-24 tactical bomber entered the arena of the Afghan War in early 1984. Its inclusion was justified not only by its formidable complement of cannon, missiles and bombs but also because of its ability to deliver these weapons more accurately while on long-duration missions. In its role as tactical bomber, it carried mainly guided air-to-ground missiles and TV- or laser-guided bombs in addition to conventional free-fall bombs. There was never any serious consideration given to using its ultimate weapon – the tactical nuclear bomb – in this conflict. Even so, it still sported a formidable array of armoury with which to help defend the pro-Soviet Kabul government against the Mujahideen rebels. Its appearance on the battlefield with twice the bomb load of the other Soviet tactical strike aircraft filled a much-needed requirement and its range enabled operation from airbases in Central Asian and Turkestan Military Districts. Basing the Su-24 outside the war zone gave increased assurance of better maintenance back-up and security to this new, sophisticated and secret bomber.

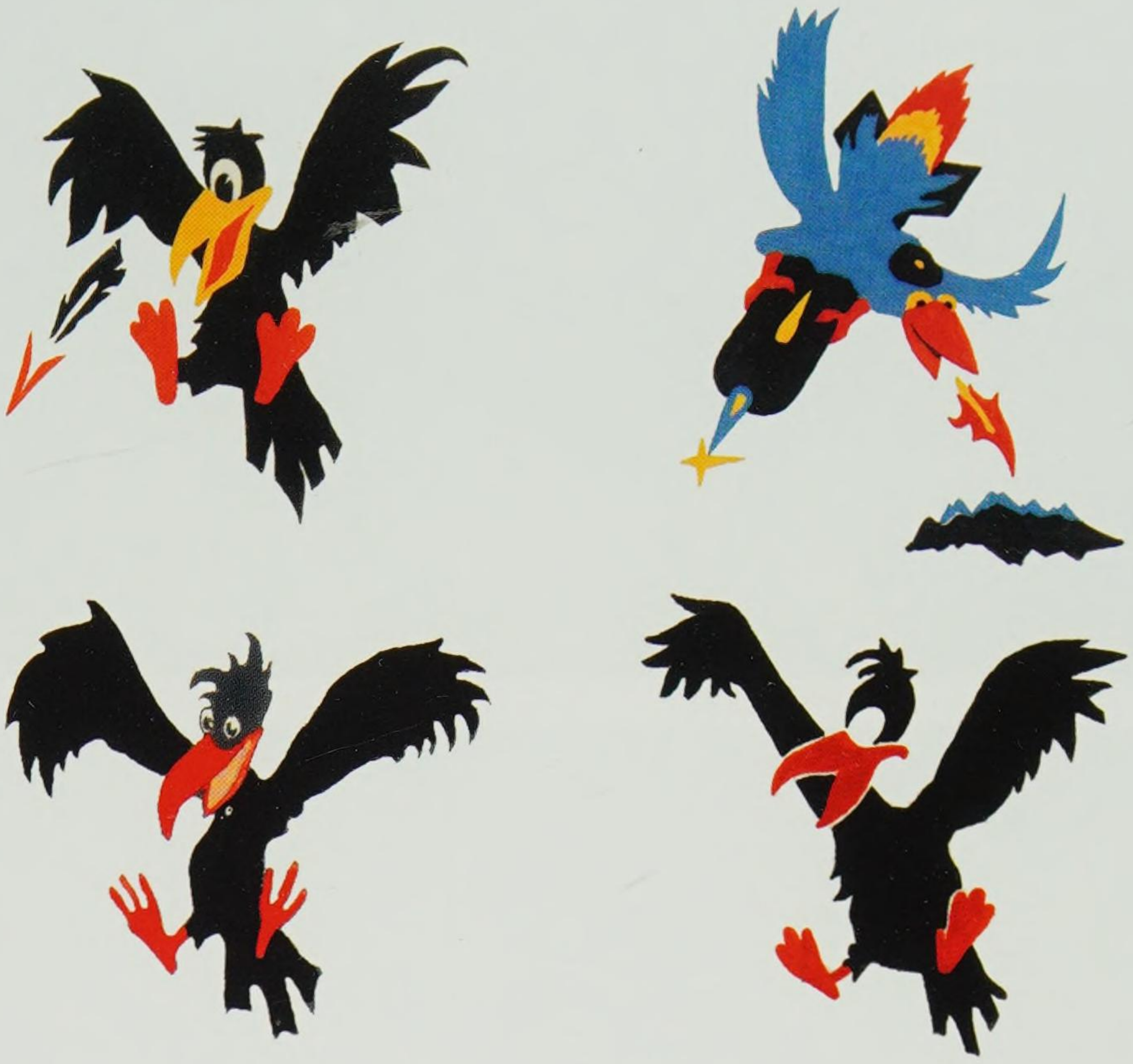
At the beginning of April 1984, the 143rd BAP and its 26 Su-24M *Fencer-Ds* then based at Kopitnari (Kutaïsi-1) airbase, Georgia, was transferred to Khanabad in support of the 40th Army. This base in south-eastern Uzbekistan (near Karshi) should not be confused with the city of the same name in Afghanistan. At the same time, the 149th GvBAP with the earlier Su-24 *Fencer-Bs* based at Nikolayevka AB in Kazakhstan (near Alma-Ata) was sent to the fighter-bomber base at Kokaïdy near Termez, just inside the border. The main reason for introducing the Su-24 was to help the Afghanistan government in Kabul gain control of the Panjshir and Charikar provinces. This was a task impossible to complete successfully without wresting the provinces from the control of the local warlord Ahmad Shah Massoud who revelled in the name of the 'Panjshir Tiger'. At the beginning of 1984 an uneasy truce was in operation between the Kabul government and Massoud. Intelligence reports indicated the truce to be a ruse by Massoud allowing his forces time to regroup and re-arm. To circumvent this, a pre-emptive strike against Massoud called

Operation *Bol'**shoy** Pandj**sher*** (Big Panjshir) was scheduled to start on 19th April 1984. The introduction of the *Fencers* was in anticipation of tipping the balance of power in favour of the Soviets.

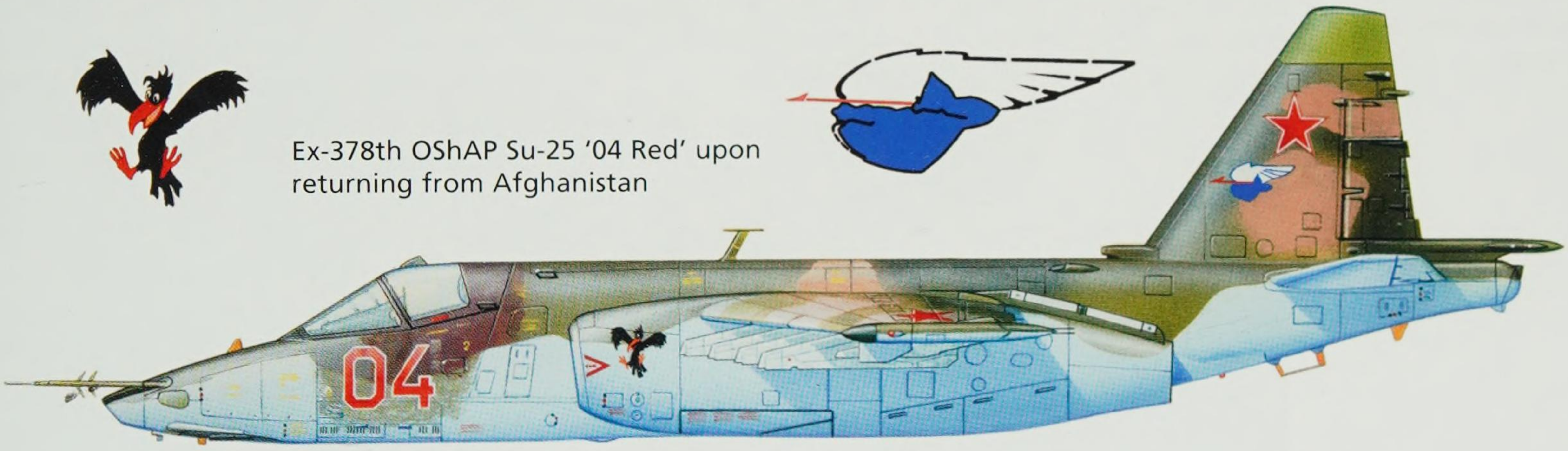
The 149th GvBAP was the first to join the action but it happened in a very strange way. After a routine training exercise, thirty aircraft returned to Kokaïdy on 15th April 1984 and wondered why their colleagues-in-arms flying the Su-17M4 were smirking. Very soon the reason became clear. The bomber crews were ordered to load their aircraft with high-explosive bombs and assigned targets a short distance away on the wrong side of the River Pyandzh that marked the border with Afghanistan. The 30 aircraft made several sorties, giving the Su-24 its baptism of fire – not in Operation *Big Panjshir* but in a minor operation aimed to accustom the crews to the feel of fighting in Afghanistan.

A prerequisite for any attack by the *Fencers* was a reconnaissance flight by either the Su-17M3R *Fitter-J* or Antonov An-30 *Clank* during which the target was photographed and its position accurately determined. The coordinates would then be fed into the Su-24s' navigation computers to enable the PNS-24 automatic navigation/attack system to take the bomber automatically to the designated target and deliver the bombs accurately. On operations it was mandatory for the aircraft to carry 3,000-litre (660 Imp gal) PTB-3000 fuel tanks on the two wing glove pylons.

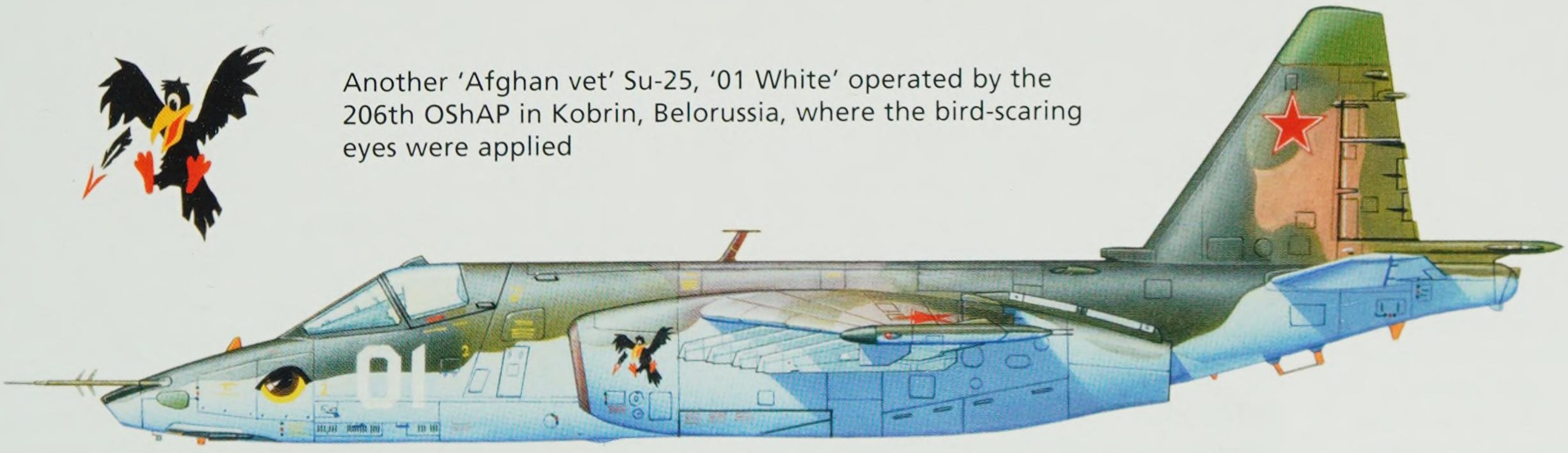
Soviet authorities were totally unprepared for the adverse affect that the rarefied mountain air had on the accuracy of guided bombs and air-to-ground missiles. Consequently 'dumb' iron bombs became the usual choice of weapon; in those days the customary load being either four 500-kg (1,100-lb) or twelve



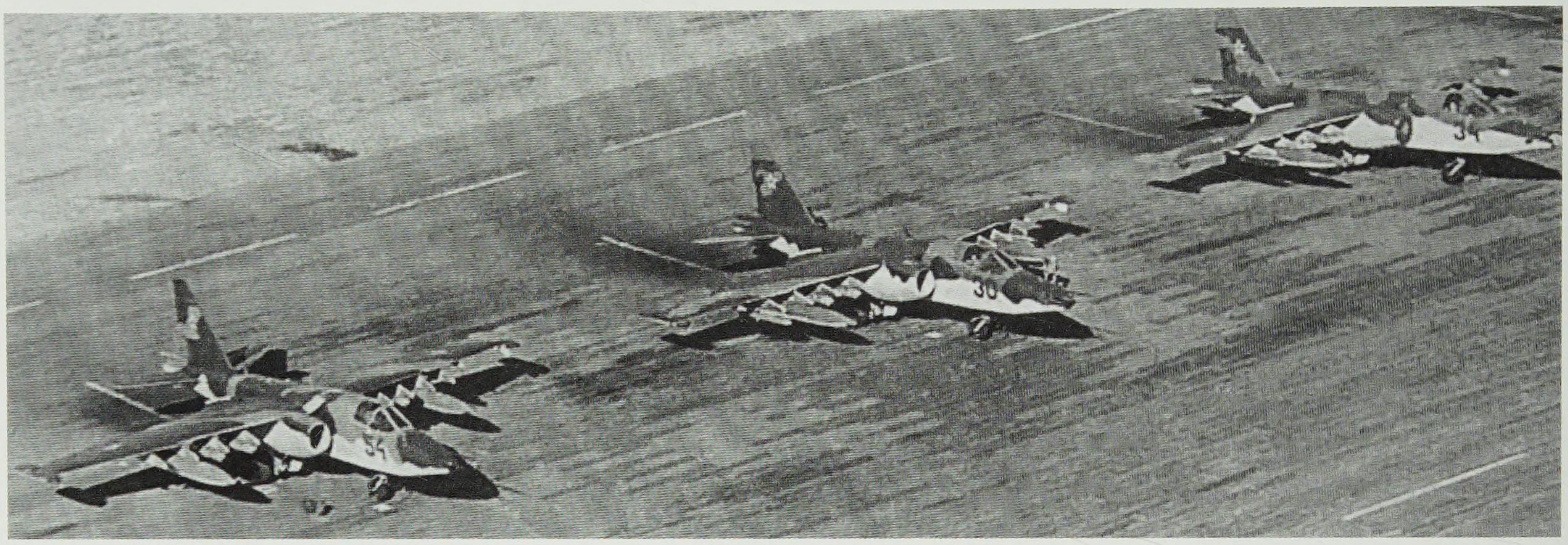
Different versions of the 'rook' emblem applied to the Su-25 on the Afghan TO. The fire-breathing rook is noteworthy.



Ex-378th OShAP Su-25 '04 Red' upon returning from Afghanistan



Another 'Afghan vet' Su-25, '01 White' operated by the 206th OShAP in Kobrin, Belorussia, where the bird-scaring eyes were applied



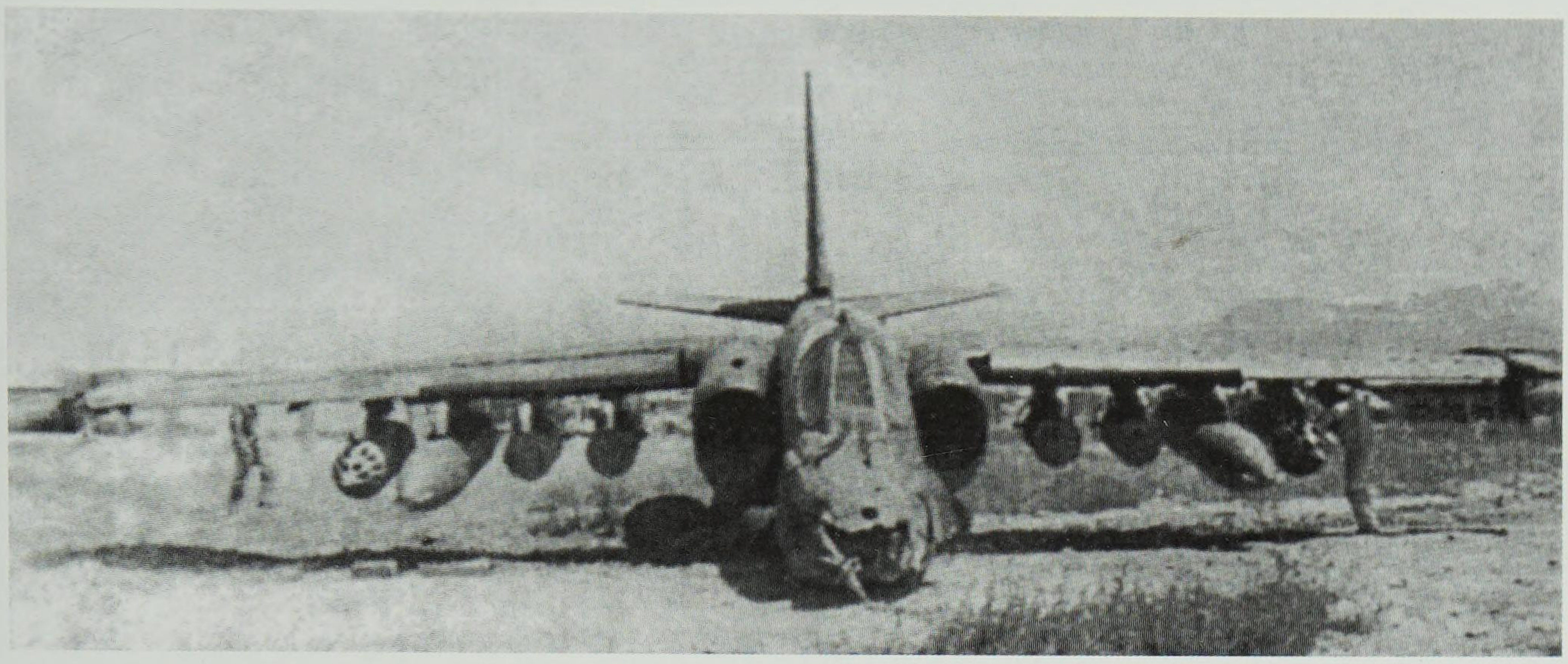
Ground and aerial views of the 378th OShAP Su-25s on the flight line at Bagram.

250-kg (550-lb) bombs. A Su-24 regiment had three squadrons, each having a nominal ten aircraft. When attacking, the first squadron led with the larger bombs, closely followed by the other two squadrons with lighter bombs.

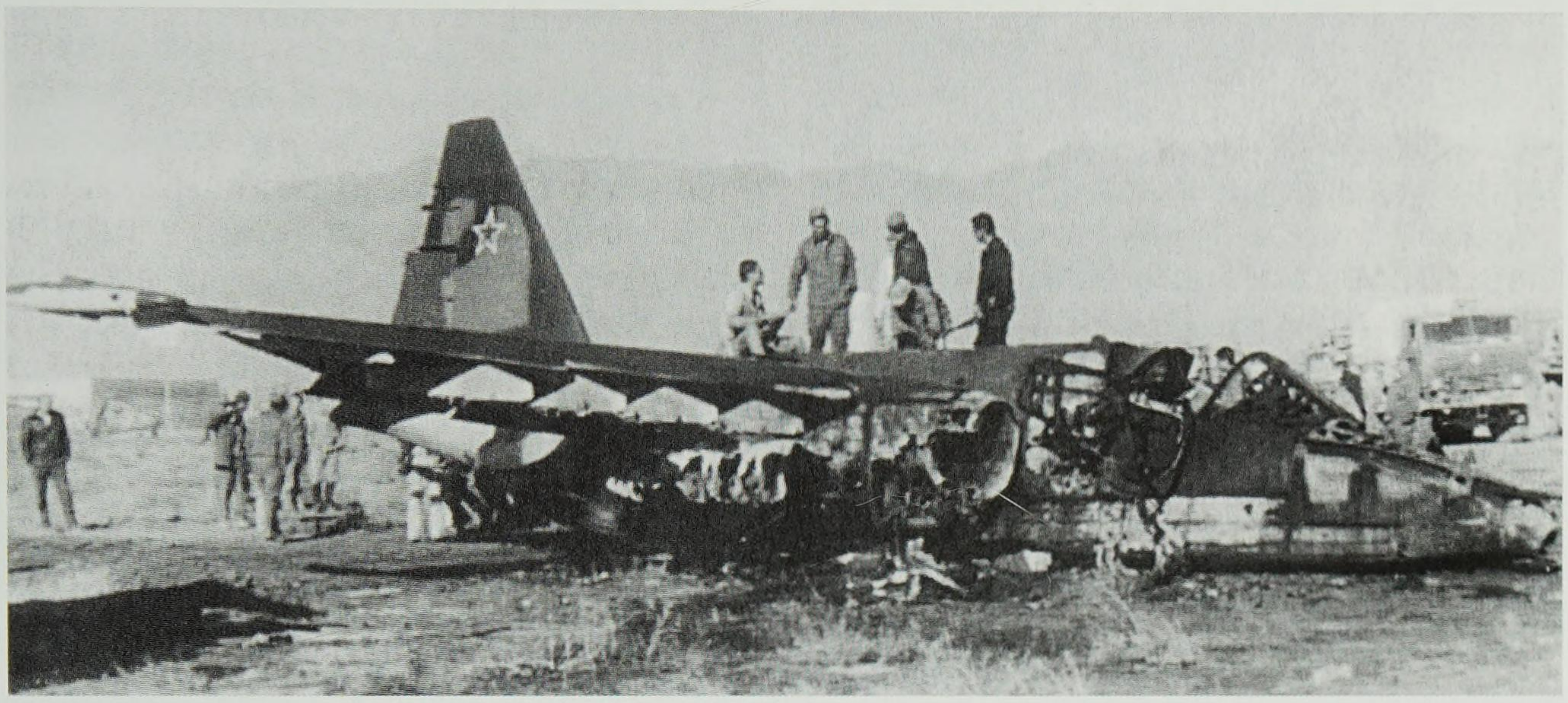
Operations were low-pressured, as the Su-24 was most effective against static targets such as fortifications while the majority of the requests by the army were for close air support against mobile targets for which the Sukhoi Su-25 or Su-17M4 were better suited. *Fencer* crews hardly averaged one sortie per week because targets meriting the use of the Su-24 were hard to find. The Mujahideen were experts at keeping well out of sight during the day by hiding in caves. As most of the fighting at that time was taking place in the mountainous regions, the Su-24s' role was reduced to carpet-bombing. It must be remembered that the bomber was designed primarily to fight battles on the flat plains of Europe where its radar could easily identify armoured vehicles. In contrast, northern Afghanistan's ruggedly mountainous terrain not only provided ample cover for the enemy but also made nap-of-the-earth (NOE) flying impossible. Forced to operate at a higher altitude, the attackers presented an easy target to Stinger missiles.

Understandably, bombing from 5,000 m (16,400 ft) was haphazardly inaccurate while attempts to attack in a 20-30° dive, although yielding more accurate results, exposed the aircraft to unacceptable risks as it recovered from the dive.

When attacking targets near the Pakistani border, the crews of the aircraft risked intruding inadvertently into Pakistani airspace and being attacked by PAF F-16As. It was a frequent occurrence for the bombers to be spotted and 'painted' by Pakistani air defence radar units in that region. Some gung-ho Soviet staff officer proposed that each bomber formation be led by a 'Wild Weasel' aircraft armed with Kh-58 anti-radar missiles. By the mid-1980s a few Sukhoi Su-24MP *Fencer-F* ECM aircraft and MiG-25BM SEAD aircraft were available to perform this mission and the idea was to destroy one or two Pakistani radar stations as an incentive for the others to keep their heads down. The suggestion was dismissed, as such a deed could be interpreted as a *casus belli* and, while unlikely to trigger World War Three, it would undoubtedly add

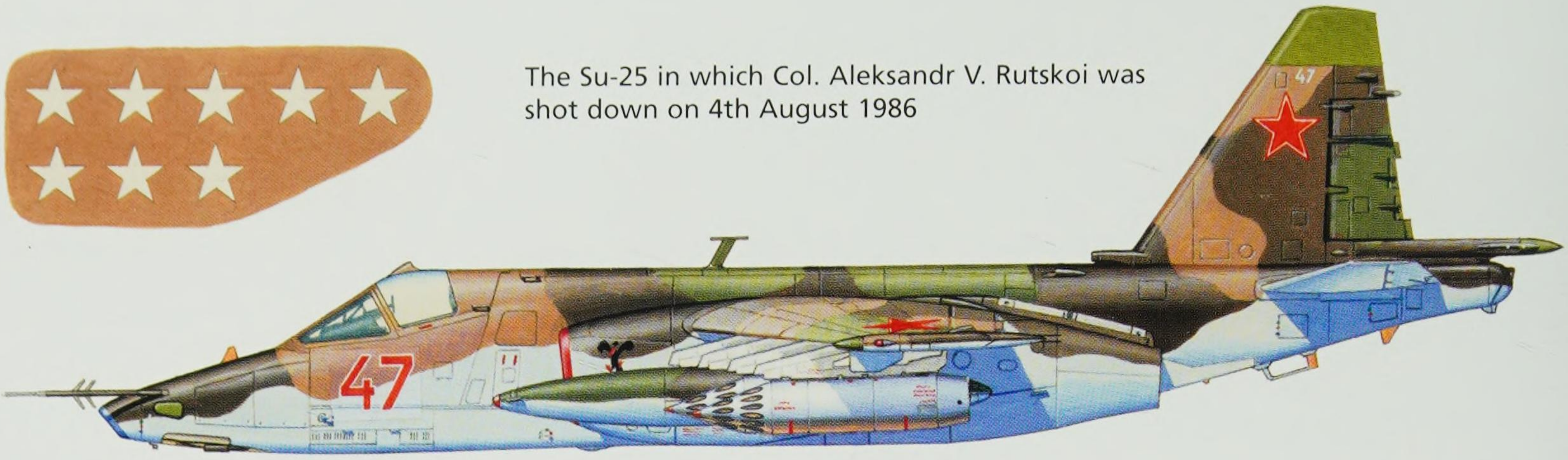


Su-25 '24 Red' piloted by Maj. A. Ob'yedkov was hit by a Stinger on 28th July 1987 but made it back to Kabul on one engine. On landing the machine overran the runway, stopping just short of a minefield.



On 27th October 1988 this Su-25 veered off the runway while landing at Bagram and was damaged beyond repair by the ensuring fire.

Soviet pilots pose for a commemorative photo with Su-25 '82 White outline' at Bagram.

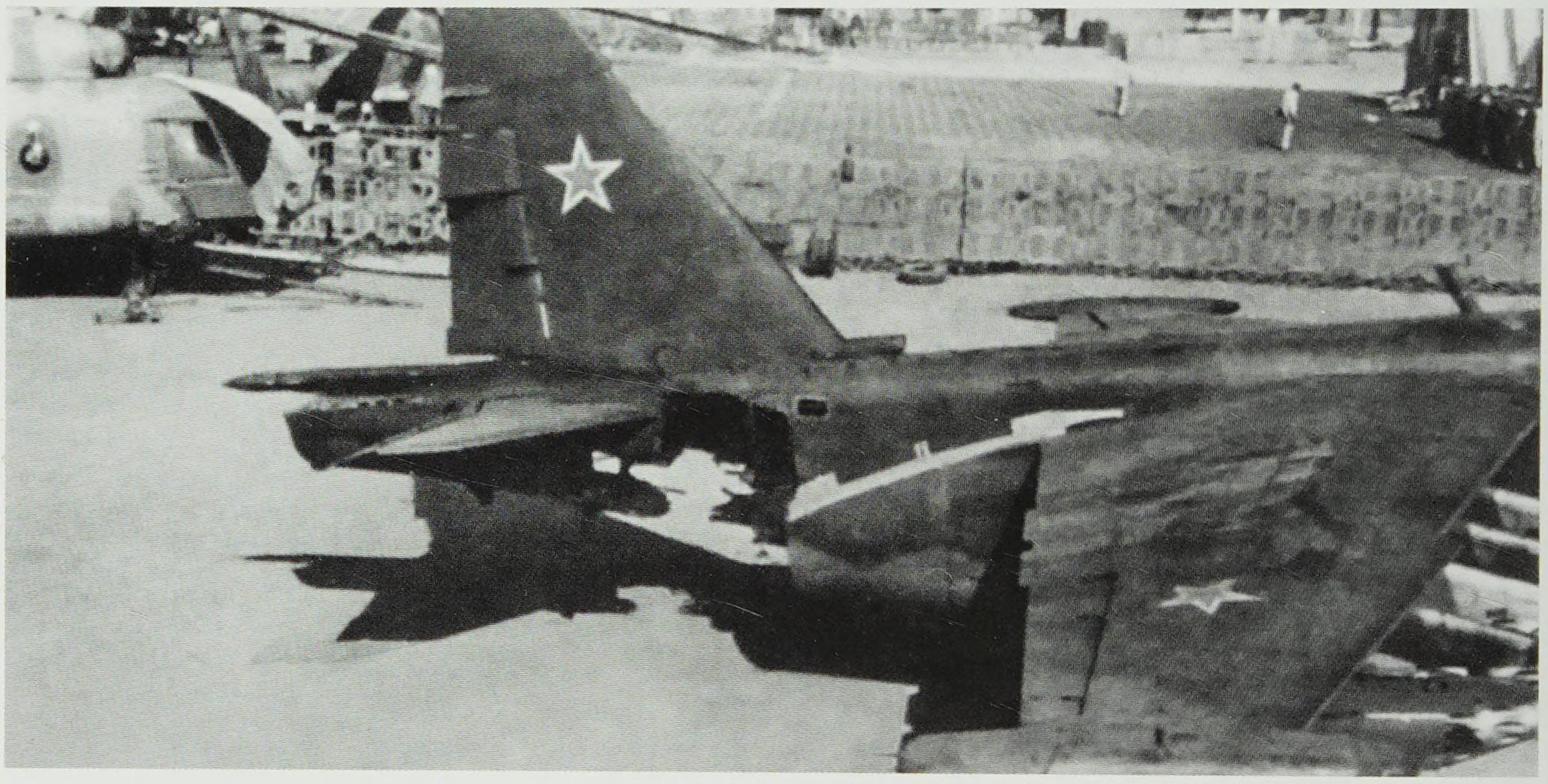


The Su-25 in which Col. Aleksandr V. Rutskoi was shot down on 4th August 1986

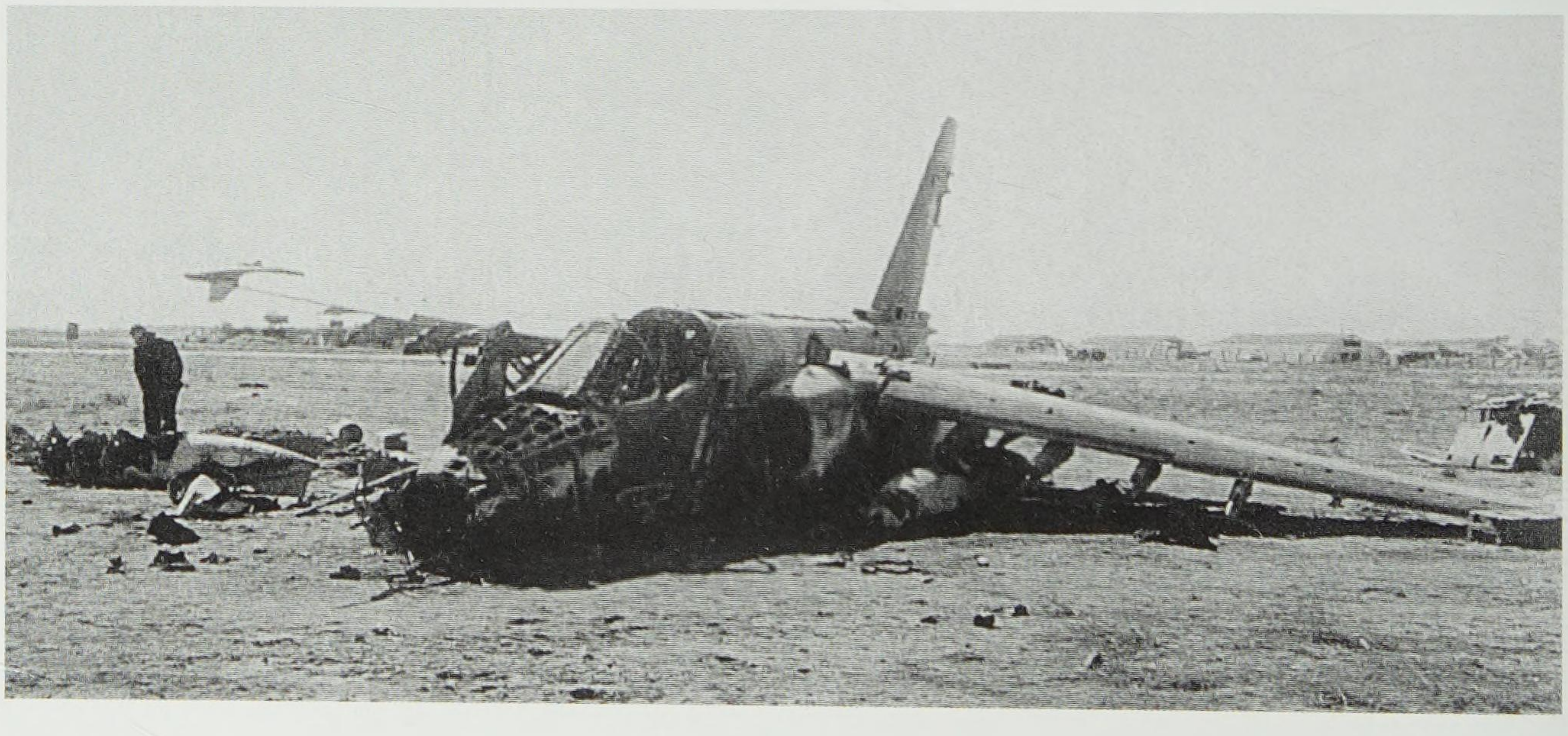
to the bad publicity that the Soviet Union was receiving for its intervention in Afghanistan.

On the positive side, it was decided to advise all aircrews that, should their aircraft be hit, they should try to cross the border into Pakistan by all means before ejecting. At least they could be bailed out from there, even if for a substantial sum in cash, whereas if captured by the Mujahideen they would be given short shrift; the Geneva Convention concerning POWs apparently does not apply to a Jihad.

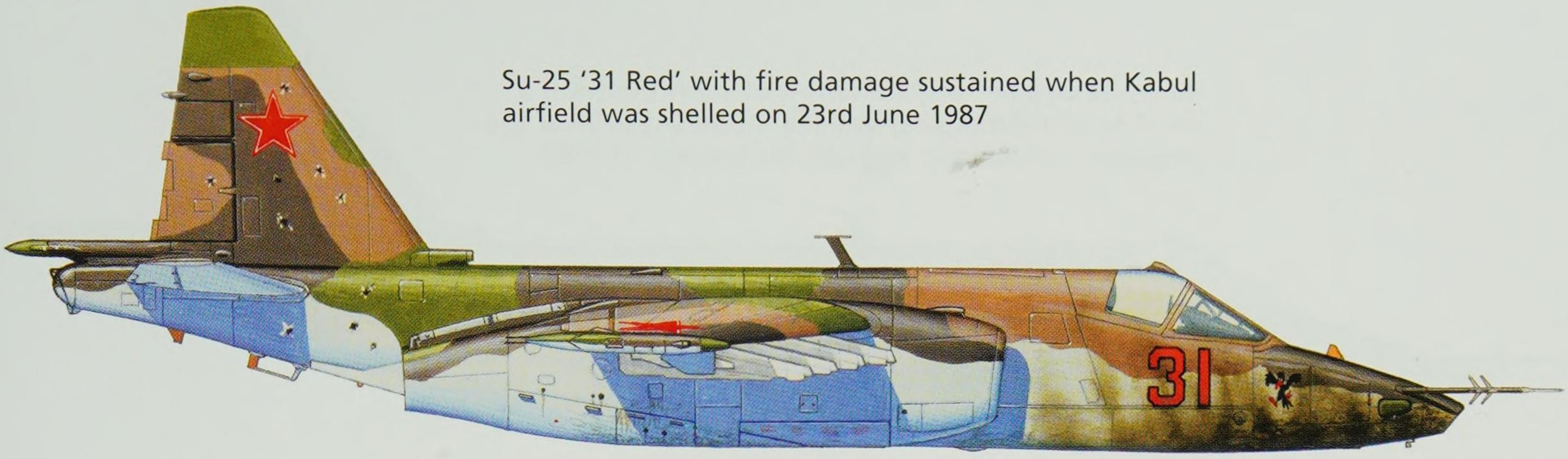
It was not until 21st April that the *Fencers* made their first contribution to Operation *Big Panjshir*. Twenty-four Su-24s of the 149th GvBAP from Kokaïdy and Tupolev Tu-16 *Badger* medium bombers attacked positions in the Panjshir Valley north of Kabul as part of a major attack. Other attacks followed



The Su-25 could take a lot of punishment and still bring the pilot home, as illustrated by the gaping hole torn in the fuselage of this *Frogfoot* by a Stinger missile.



This Su-25 coded '24 Red' undershot when landing at Bagram on 27th October 1988, shearing off the landing gear; the pilot, Maj. V. Tyurin, walked away. The aircraft was destroyed by Mujahideen mortar fire the following day.

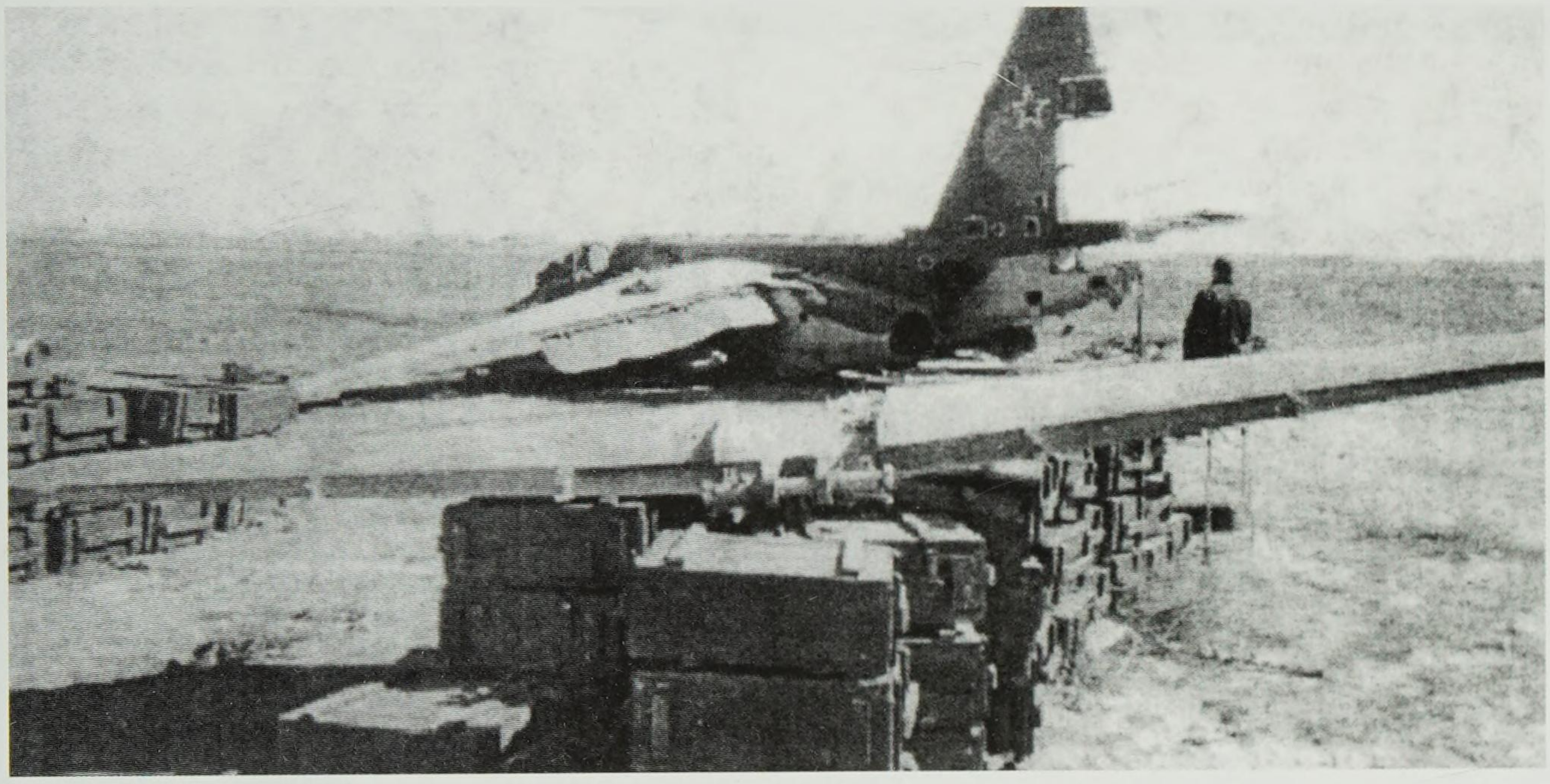


Su-25 '31 Red' with fire damage sustained when Kabul airfield was shelled on 23rd June 1987

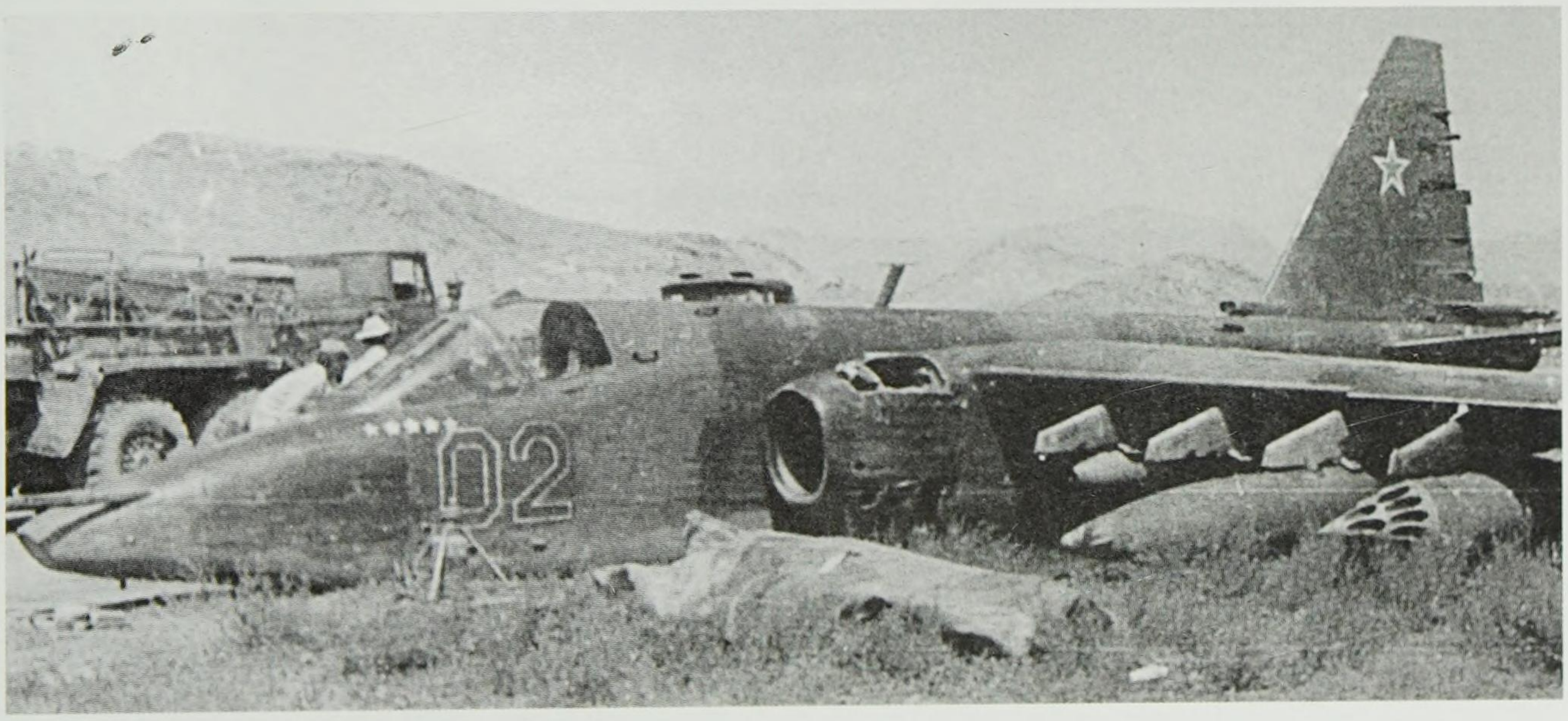
until mid-July 1984, when the Soviet High Command pronounced *Big Panjshir* a success and returned the two Su-24 regiments to their home bases in the Soviet Union.

However, the optimism of the Soviet High Command was premature. Contrary to reconnaissance information indicating cessation of Mujahideen activity, the wily 'Panjshir Tiger' had merely withdrawn most of his troops to another area and secreted others in caves in the mountains, lulling the Soviets into a sense of false security. Once the aerial bombardment had subsided, his forces emerged to attack the government troops who had moved into Panjsher Valley and began slowly but surely to drive them out.

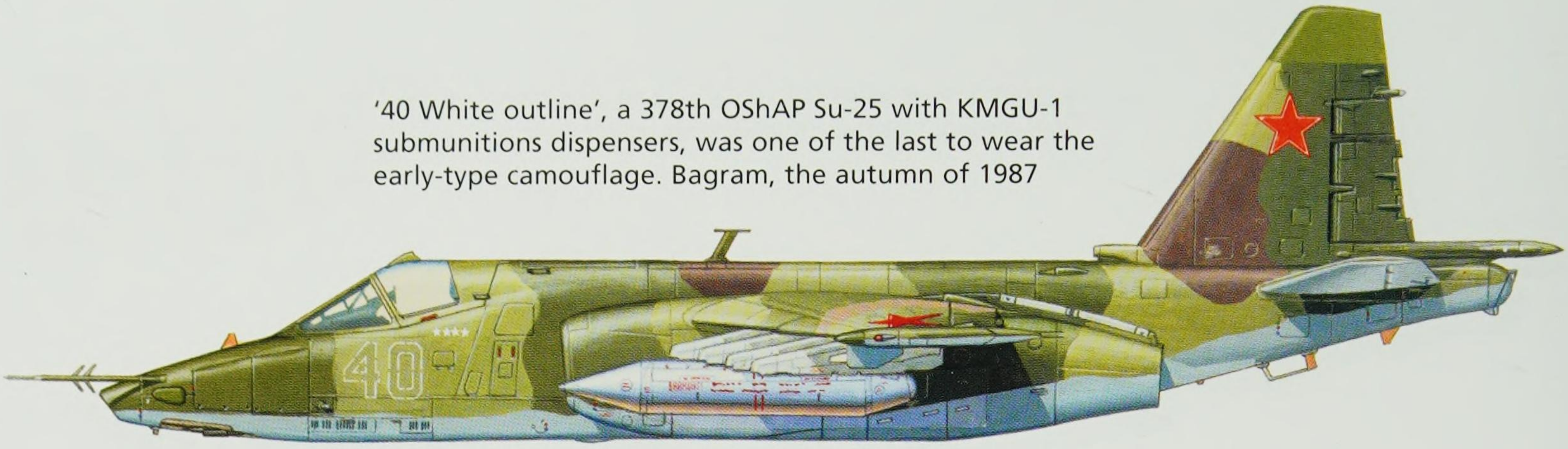
There was no further call to active service duty in Afghanistan for the Su-24 regiments



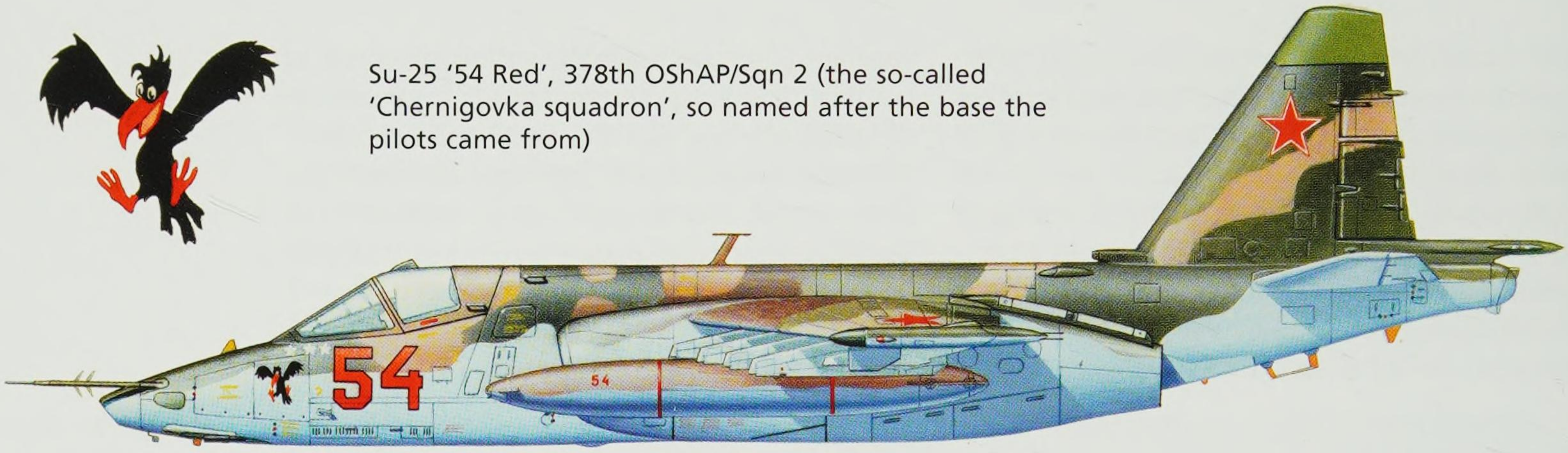
This Su-25 suffered a landing mishap at Bagram on 4th November 1988, landing too fast and overrunning the runway. It appears dismantling is already in progress.



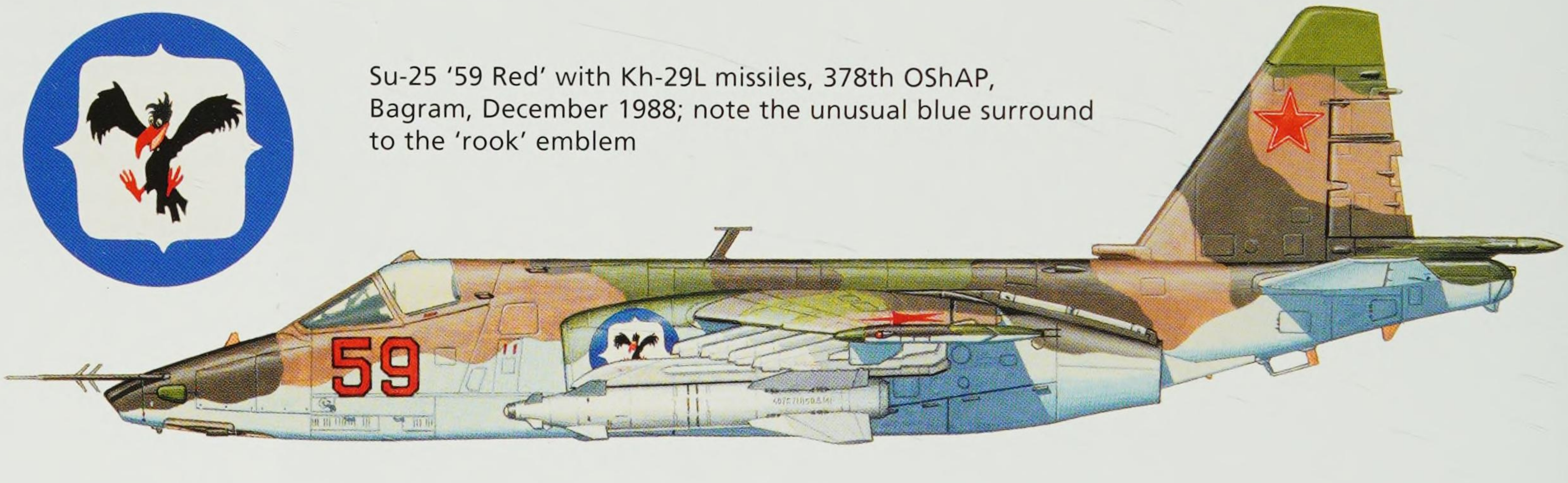
Maj. A Rybakov' Su-25 '02 White outline' was hit by a Stinger missile on 28th May 1987 and made a belly landing at Kabul airport. Note the five mission markers.



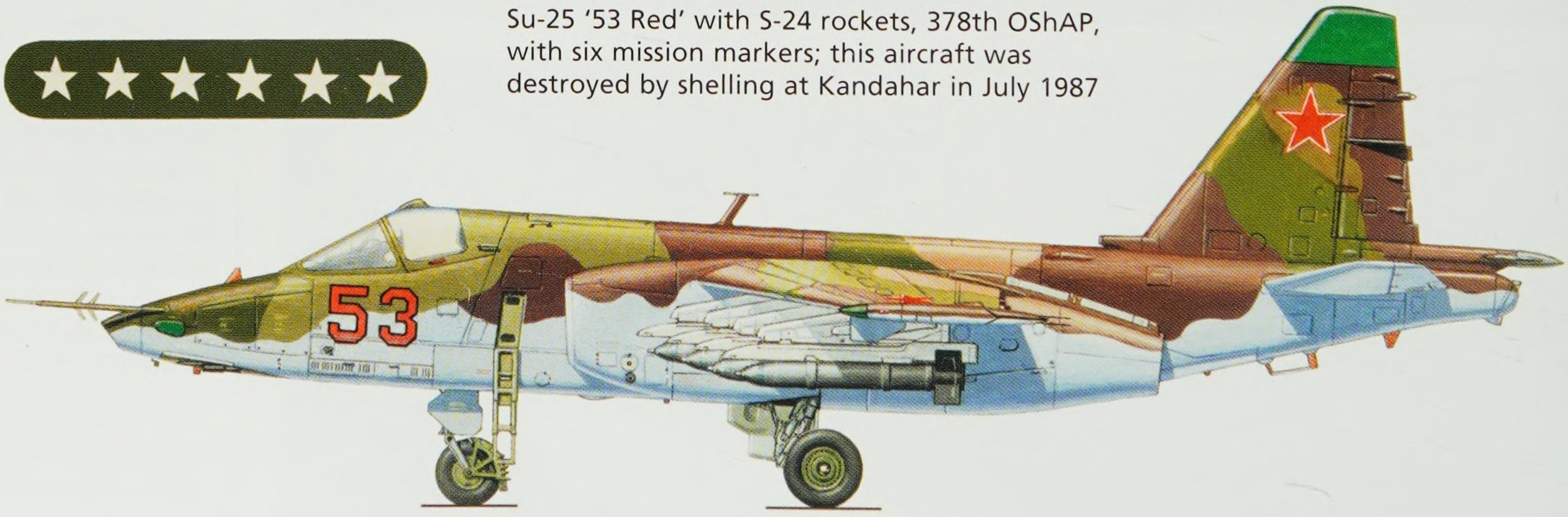
'40 White outline', a 378th OShAP Su-25 with KMGU-1 submunitions dispensers, was one of the last to wear the early-type camouflage. Bagram, the autumn of 1987



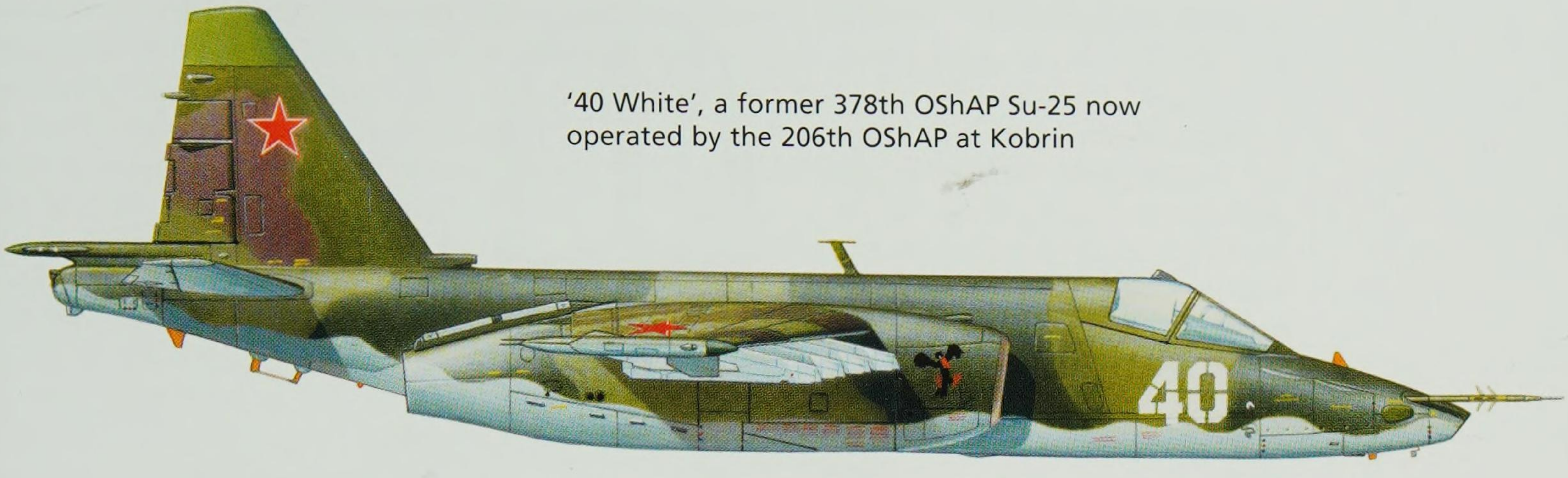
Su-25 '54 Red', 378th OShAP/Sqn 2 (the so-called 'Chernigovka squadron', so named after the base the pilots came from)



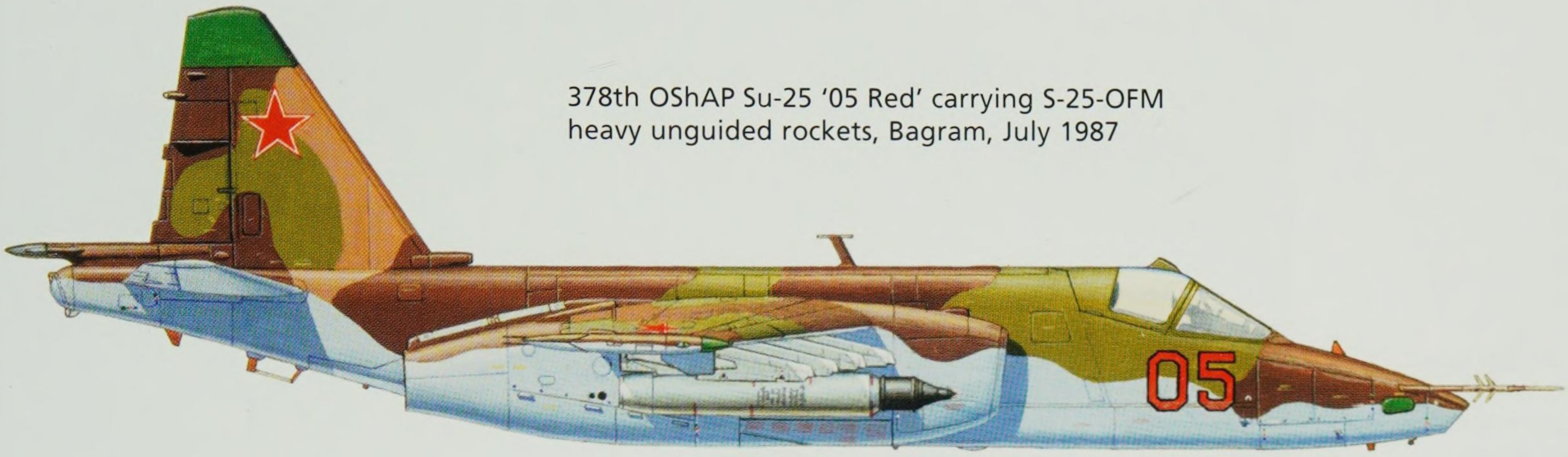
Su-25 '59 Red' with Kh-29L missiles, 378th OShAP, Bagram, December 1988; note the unusual blue surround to the 'rook' emblem



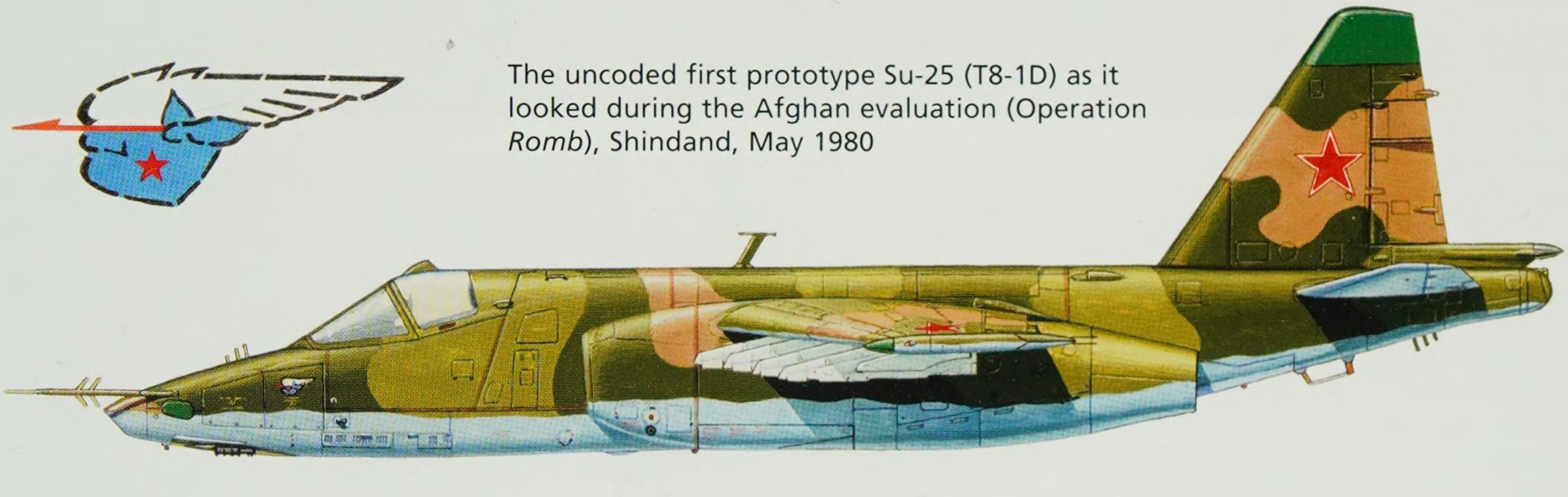
Su-25 '53 Red' with S-24 rockets, 378th OShAP, with six mission markers; this aircraft was destroyed by shelling at Kandahar in July 1987



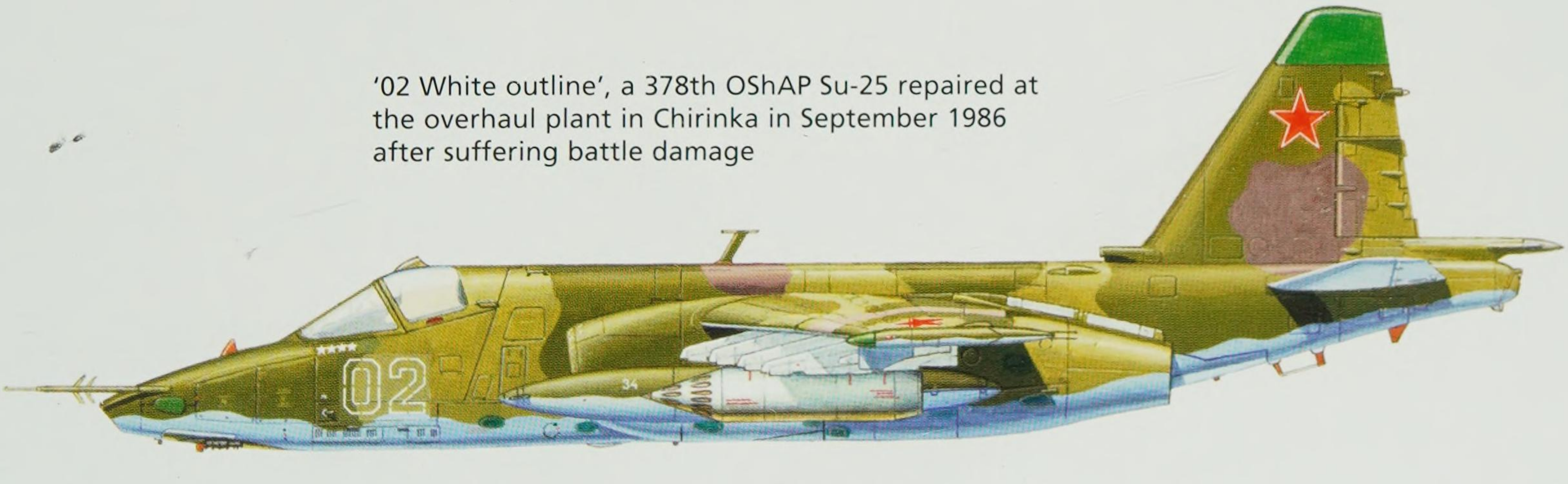
'40 White', a former 378th OShAP Su-25 now operated by the 206th OShAP at Kobrin



378th OShAP Su-25 '05 Red' carrying S-25-OFM heavy unguided rockets, Bagram, July 1987

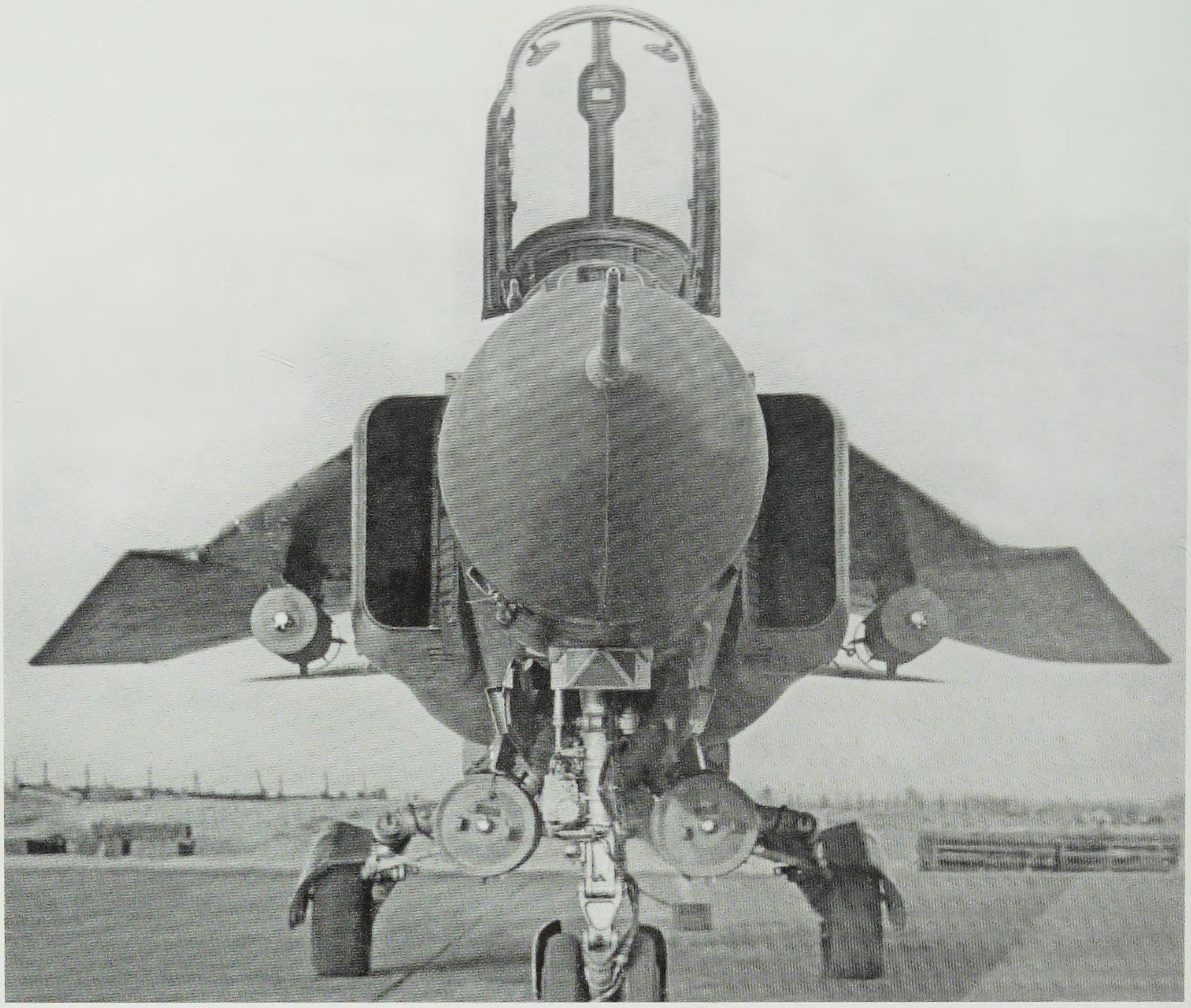


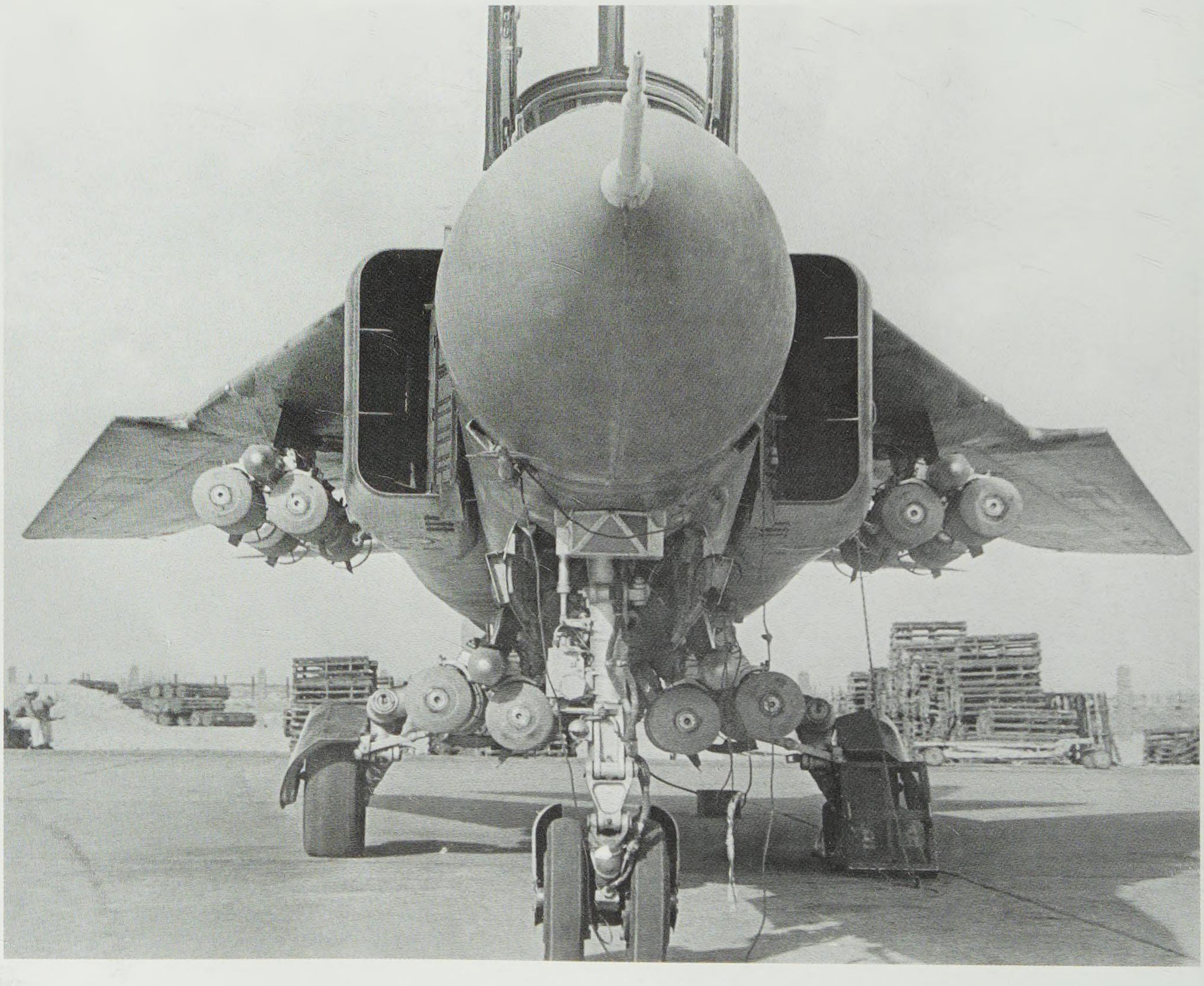
The uncoded first prototype Su-25 (T8-1D) as it looked during the Afghan evaluation (Operation *Romb*), Shindand, May 1980



'02 White outline', a 378th OShAP Su-25 repaired at the overhaul plant in Chirinka in September 1986 after suffering battle damage

for another four years until, in 1988, they were asked to provide air cover for the Soviet withdrawal. Two regiments shared this tour of duty and once again the 149th GvBAP with its Su-24 *Fencer-Bs* was involved. The partner this time was the 735th BAP, recently reorganised from the 735th IAP PVO (an Air Defence Force fighter unit). This regiment had received 31 *Fencer-A/Bs* made available when existing bomber regiments re-equipped with the more





In Afghanistan bombs of various types were the MiG pilots' weapons of choice, with unguided rockets also used occasionally. The MiG-23ML in the lower photo carries 16 FAB-100 bombs on four MBD2-67U multiple ejector racks (MERs); the other one carries two FAB-250s and two FAB-500s.

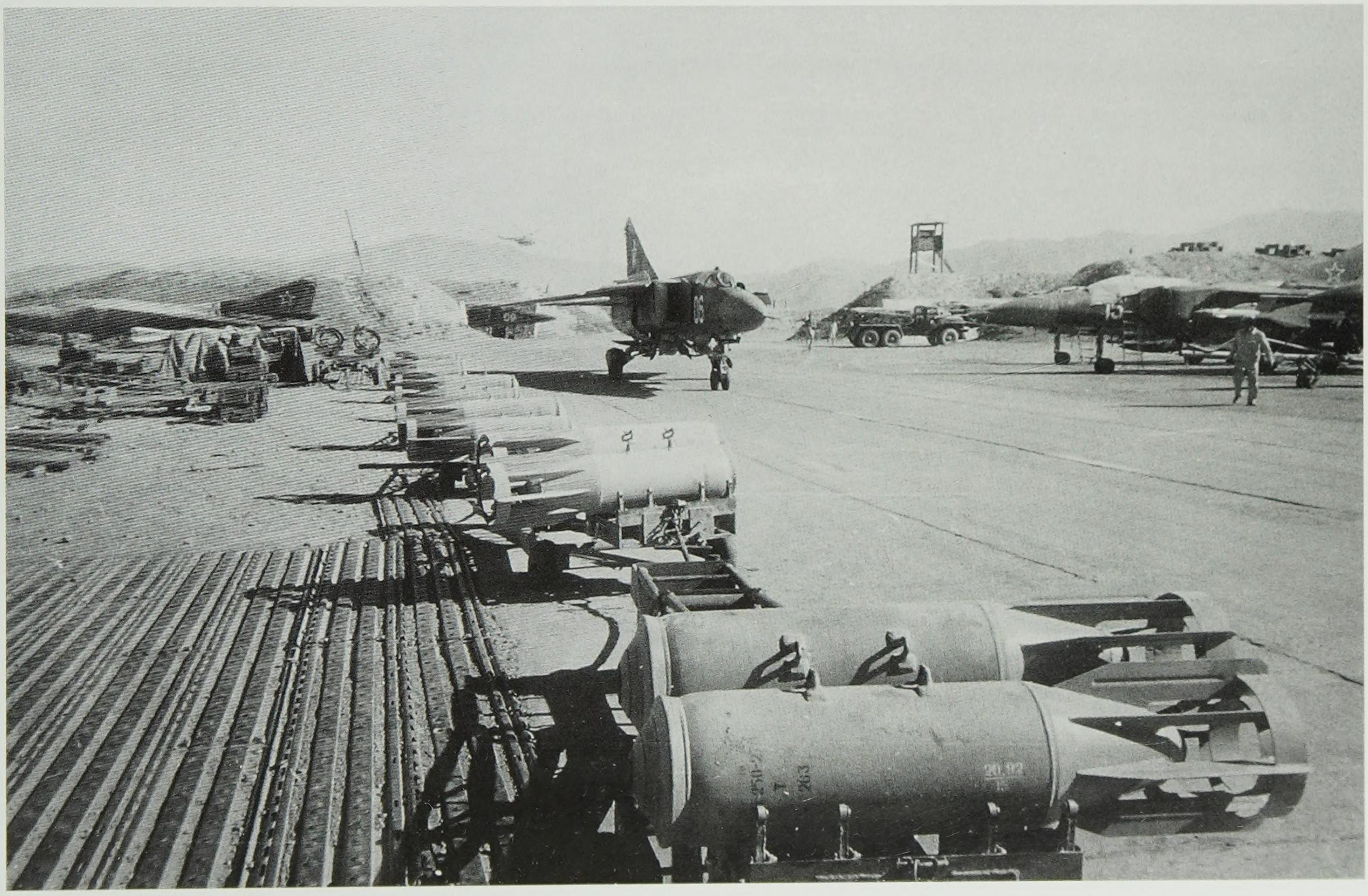
modern Su-24M, and then had joined the 36th BAD in Georgia. The 149th GvBAP was deployed to Khanabad, the 735th BAP went to Karshi. At this stage, with the Soviet Union already pulling out of the pointless conflict, the Su-24s' remit was first and foremost to harass the Mujahideen and, by forcing them to keep their heads down, minimise their interference with the withdrawing 40th Army.

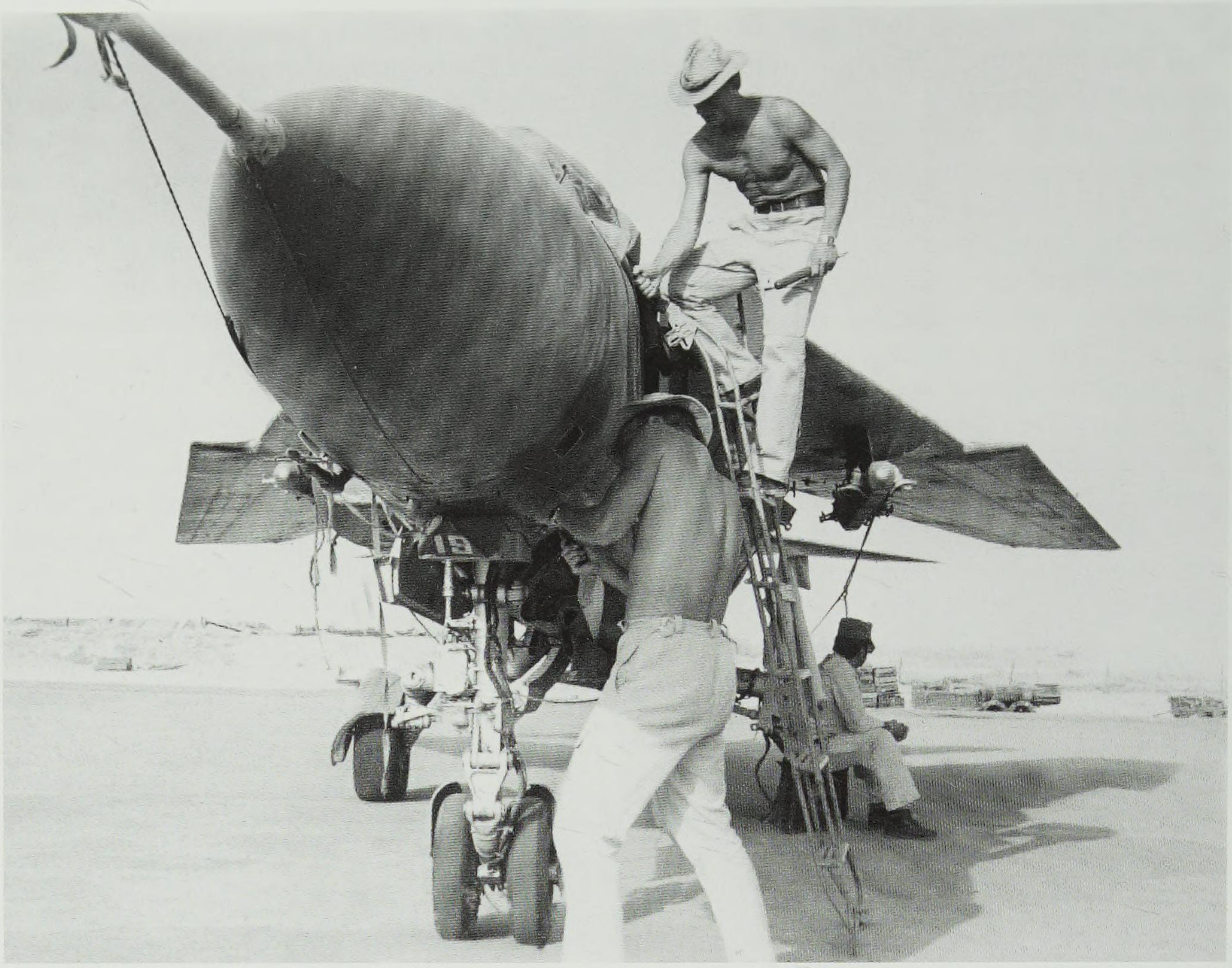
More often than not the 250- and 500-kg bombs used by the *Fencers* in 1984 were replaced by 1,500-kg (3,300-lb) HE bombs and ODAB-500P FAE bombs. It was only rarely that large troop concentrations were physically present to be targeted but on these occasions RBK-500 cluster bombs were used with devastating effect, being packed with hundreds of thousands of 5.5-mm (0⁷⁄₃₂ in) steel pellets shredding every living thing within an area of 400 x 600 m (1,310 x 1,970 ft).

One disappointment was the lower-than-average reliability of the fuel-air bomb that negated its effectiveness as a useful weapon. Aircraft from the 149th GvBAP often raided Mujahideen bases near Maydanshakhr and Charikar, sometimes even going as far as Kandahar and Jalalabad which were at the extreme limit of their combat radius. On 2nd November 1988 the regiment was instructed to make a refuelling stopover at Kokaïdy to extend their operational range. This was not repeated because landing a Su-24 was not easy at any time but landing a whole regiment of Su-24s, each with drop tanks and a full bomb load, would be courting disaster. Why no Su-24Ms with their 'buddy-buddy' in-flight refuelling capability were sent to Afghanistan on this occasion is a mystery. Had they been available, it would have avoided the necessity for a refuelling stop.

While the 149th GvBAP continued its interdiction missions, the aircraft of the 735th BAP usually operated as 'on-call bombers' summoned by army units as required. On one such mission near Kandahar in late November 1988 the Su-24s armed with 1,500-kg bombs were approaching the target area where Su-17s and Su-25s were already spinning a 'wheel of death' and pounding Mujahideen positions. All well and good but there were two drawbacks to this procedure. Firstly, the FACs on the ground, fearing that the enemy would get away, constantly urged the *Fencers* to attack immediately – not an easy task, as it was all too easy to collide with the circling *Frogfeet*. Secondly, the bomber crews feared that hanging around for too long would leave them with insufficient fuel to return home.

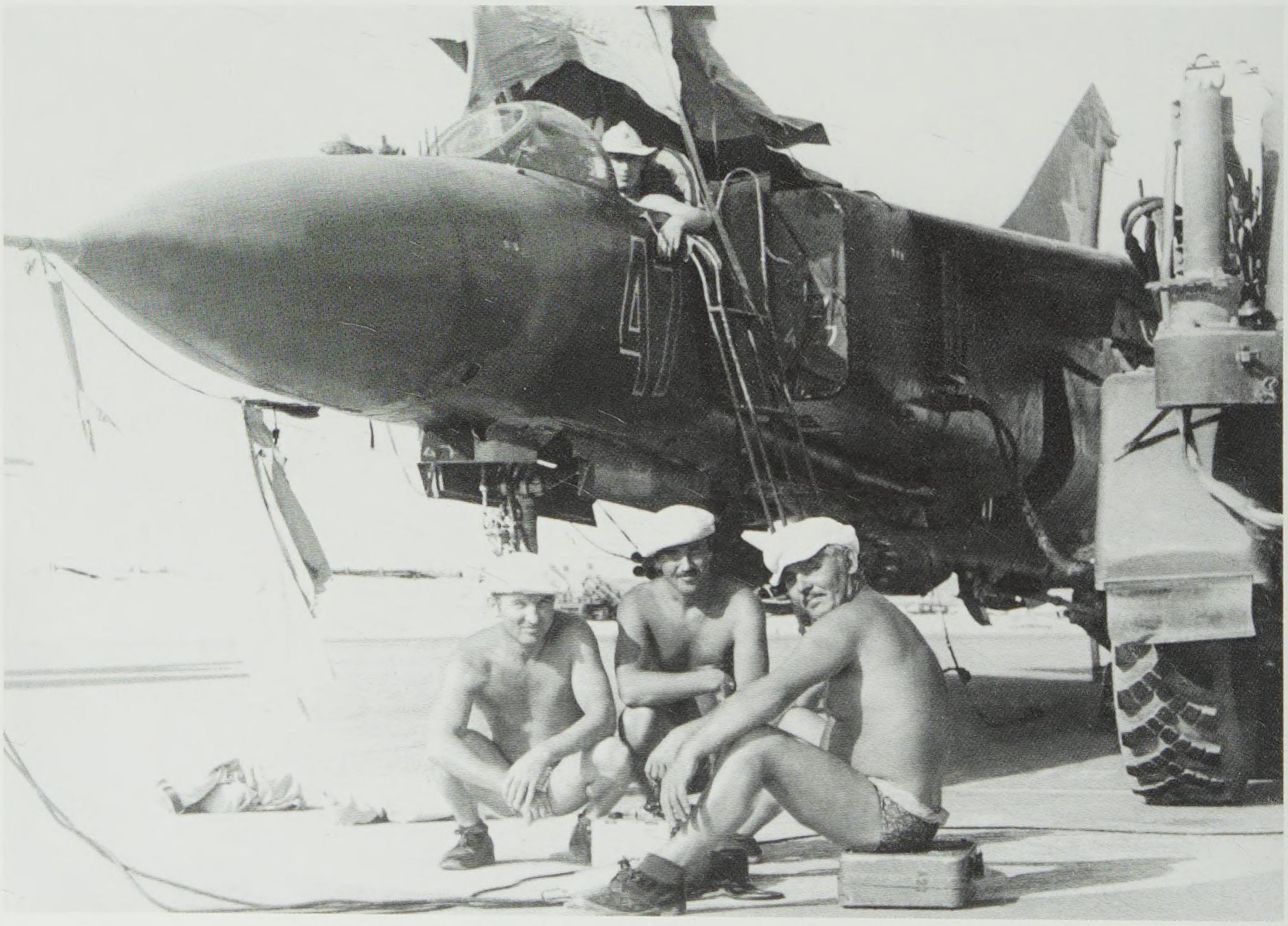
FAB-250M54 bombs ready for hooking up at Bagram.



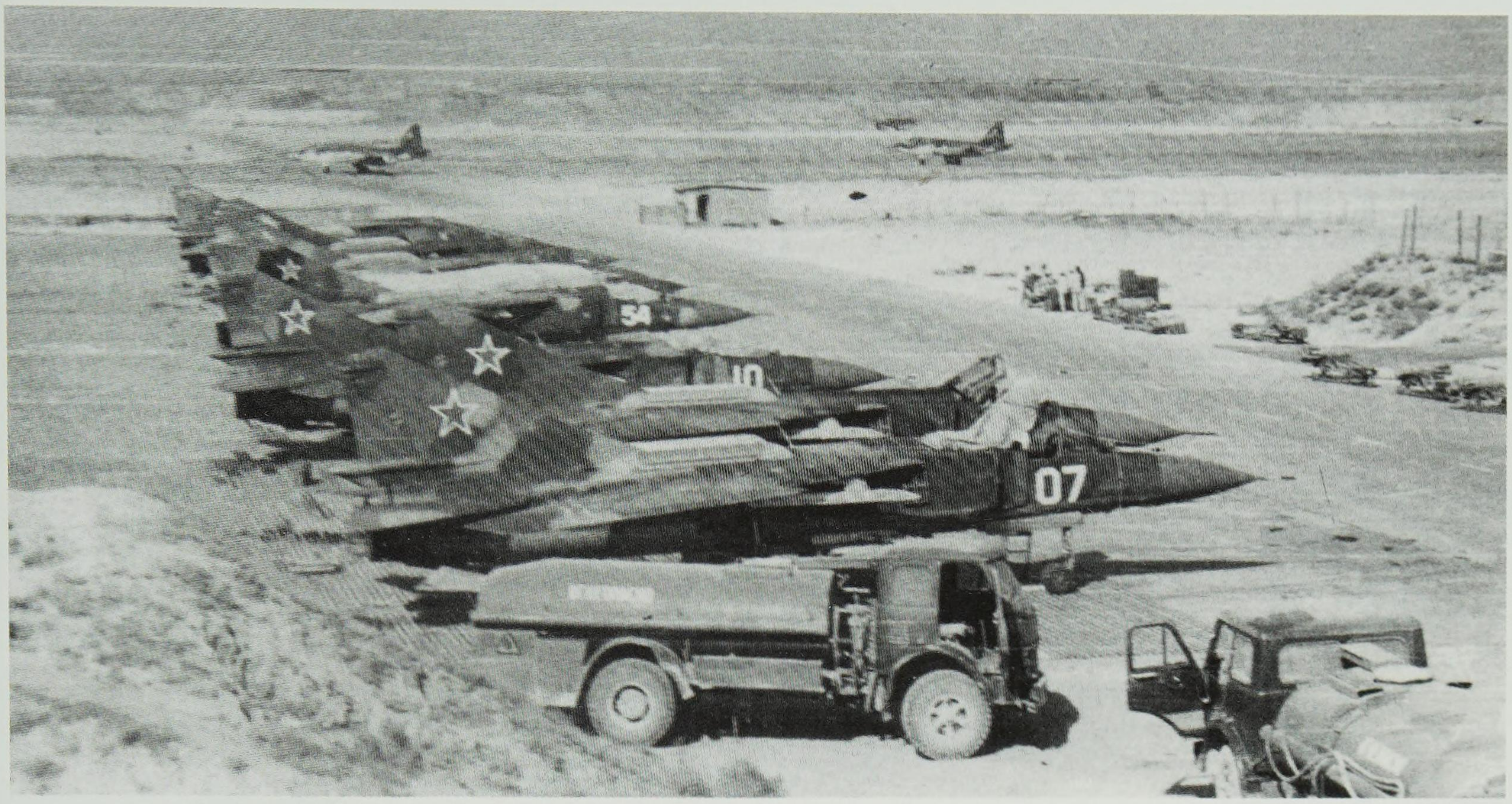


Routine maintenance in progress on a MiG-23MLD.

When the leader of the Su-24 formation requested (and received) permission to attack, the FAC was perplexed on hearing the unfamiliar callsign '***A**ist*' (Stork) and jokingly commented, 'Storks? What storks? There's enough work here to keep the 'rooks' busy for a day!' He was, of course, referring to the Su-25s popularly known as *Grach*, as mentioned above. No sooner were the words out of his mouth when the first 3,300-pound bomb



In the extreme heat of Afghanistan the ground crews had to work almost naked.

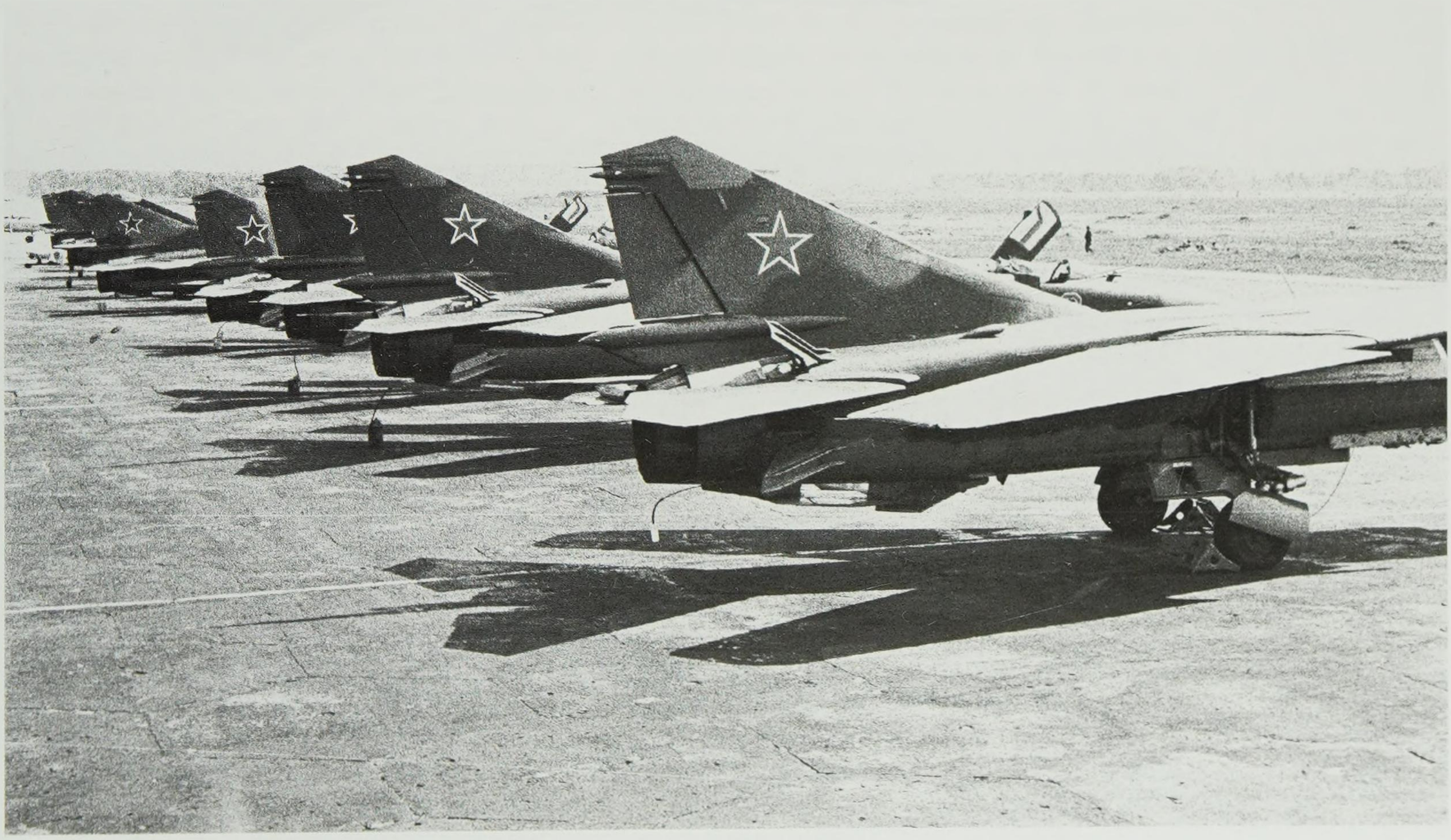


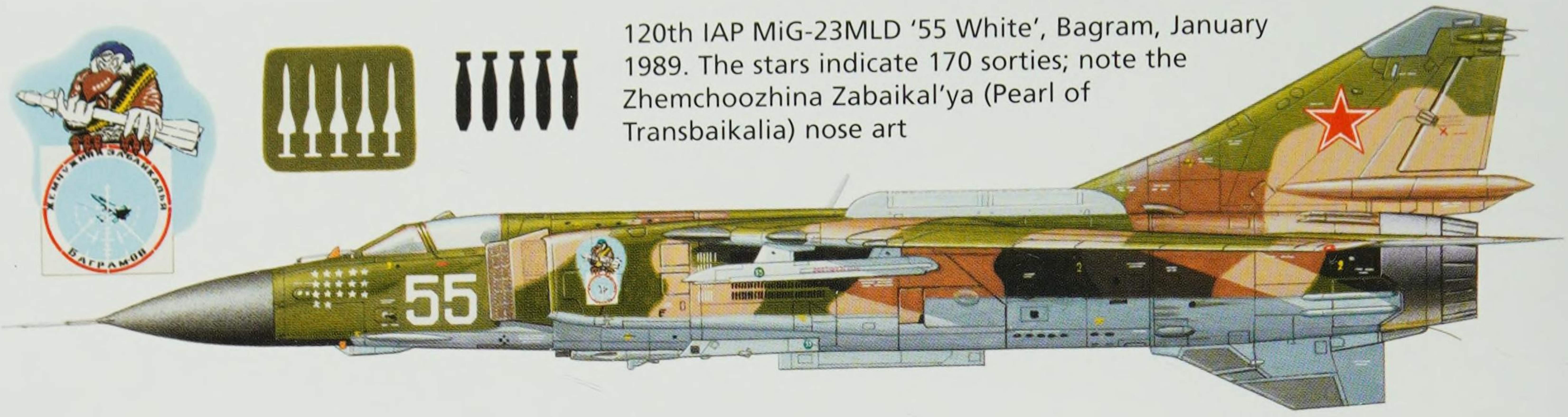
The first 120th IAP MiG-23MLDs at Bagram, September 1988.

went off and he quickly changed his tune, *'Holy s**t! What are you guys dropping out there? It kicks the mountains right out from beneath my ass!'* Of course he had never before experienced the full force of a bomb of that size and the explosion created a volcano of dust. Not impressed with this joker, the pilot demanded to know whether his regiment's bombs had hit the target as he had spotted another group of fighter-bombers approaching. In fact the bombing had been successful and, as there were no Mujahideen left for the oncoming aircraft to attack, the 'rooks' and the 'storks' returned safely to their 'nests'.

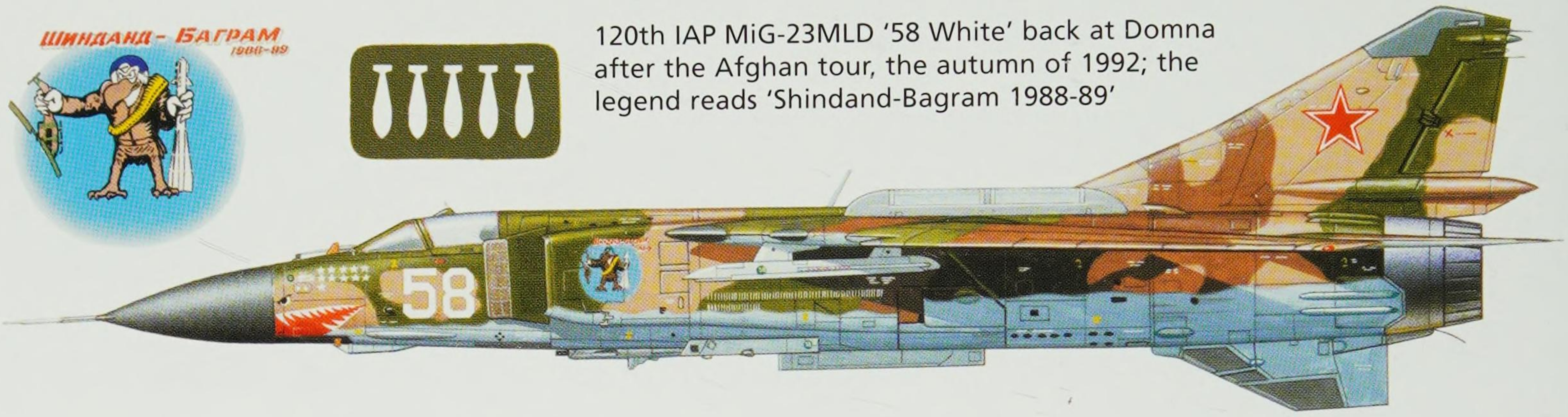
On another occasion, twelve 149th GvBAP *Fencers* were hurrying home to Khanabad on the last dregs of fuel after successfully fulfilling a mission near Kandahar. The first bomber of

MiG-23MLs on the flight line at one of the Afghan bases.

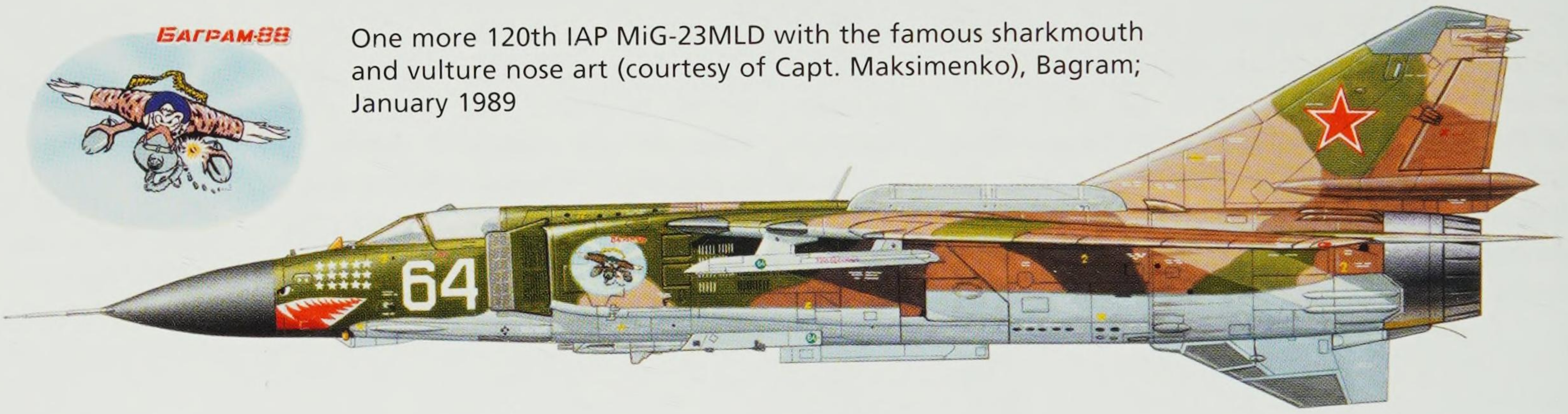




120th IAP MiG-23MLD '55 White', Bagram, January 1989. The stars indicate 170 sorties; note the Zhemchoozhina Zabaikal'ya (Pearl of Transbaikalia) nose art



120th IAP MiG-23MLD '58 White' back at Domna after the Afghan tour, the autumn of 1992; the legend reads 'Shindand-Bagram 1988-89'

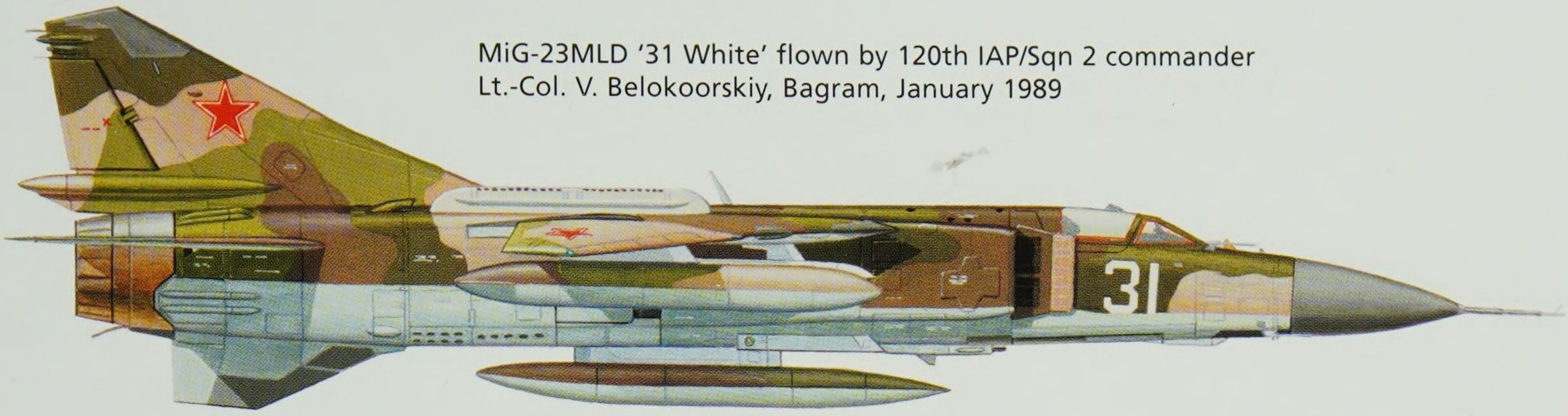


One more 120th IAP MiG-23MLD with the famous sharkmouth and vulture nose art (courtesy of Capt. Maksimenko), Bagram; January 1989

the squadron burst two tyres on touchdown, igniting the magnesium wheel rims before the aircraft came to a halt. While fire-fighters battled the blaze, the remaining aircraft were ordered to divert to the alternate airfield at Kokaïdy – more than bad news when you have only a teaspoonful of fuel in your tanks! One can only imagine the heartfelt relief when all aircraft landed successfully with fuel gauges registering empty. At Kokaïdy the pilots had to service the aircraft on their own, and no second sortie was flown that night. Amid the confusion, they had quite forgotten to recover the brake parachutes from the runway, and one of the parachutes was promptly ingested by a taxying IL-76MD *Candid-B* transport bound for Afghanistan. Of course, the aircraft had to be grounded for an engine change, an argument erupted, with the aircrews of the 149th GvBAP at odds with the base commander.

21st January 1989 was the day when a final attempt was made to eliminate Ahmad Shah Massoud in his bunker at Karabat north of Kabul. For this mission the combined forces of the 735th BAP and 143rd BAP, which had replaced the 149 GvBAP at Khanabad, were mobilised. Yet, once again the 'Panjsher Tiger' managed to get away. During the final weeks prior to the Soviet pullout from Afghanistan missions were flown in the Kabul area, the Charikar valley and along the infamous Salang Pass, the scene of much fighting. Observing the contrails of high-flying Su-24s, a TV reporter commented that he was watching the 'the final flight of Soviet bombers from Afghanistan'. Either disorientated or carried away by his own rhetoric, he did not realise the jets were heading *away from Soviet territory* and were, in fact, on a bombing raid.

Although Soviet forces had withdrawn, the Su-24s were ordered to stay for another month


MiG-23MLD '31 White' flown by 120th IAP/Sqn 2 commander Lt.-Col. V. Belokoorskiy, Bagram, January 1989

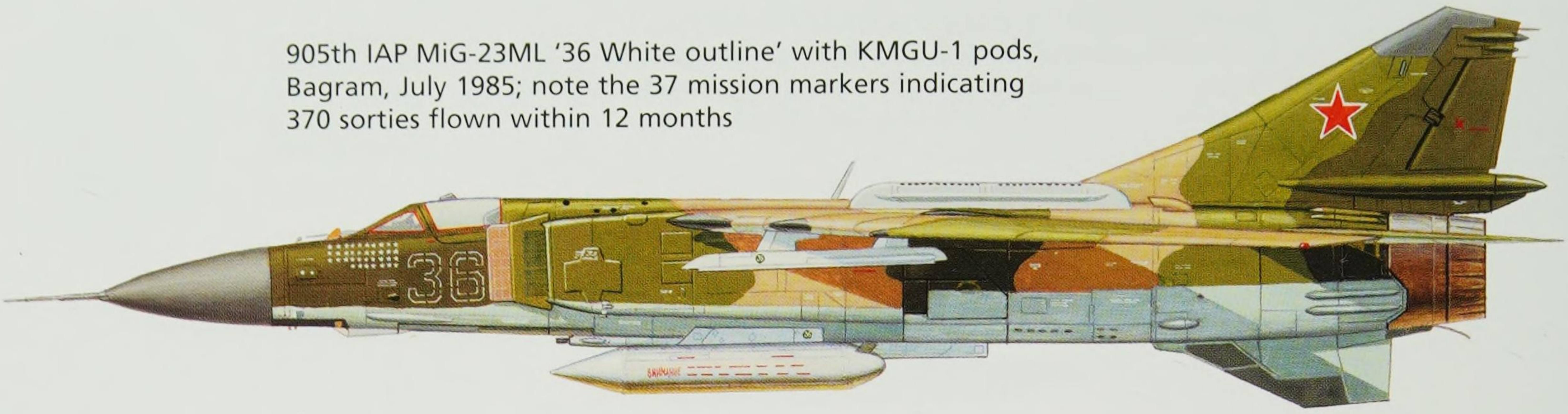
in readiness to give support to Najibullah's pro-communist government if the Mujahideen attacked Kabul. Crews were issued with detailed maps of the city marked with specific targets. These targets were to be destroyed by laser-guided bombs (KAB-500L and KAB-1500L) and air-to-ground missiles (Kh-25L and Kh-29L). In the event, however, no such action was requested and the aircraft returned to their home bases on 6th March thus ending the involvement of the *Fencer* in Afghanistan.

Overall, in Afghanistan the Su-24 showed good reliability, despite the time it took for the crews to adapt to operating of the computerised navigation/attack suite in the new environment. Problems with the suite were traced to over-hasty preparation of missions leading to programming errors. On the mechanical side, failures were confined to the flap and engine controls and the hydraulics system. In addition, one particular problem that gave the crews a headache was the failure of the flow of fuel from the drop tanks carried under the wings. If the tanks were not jettisoned before returning to base the landing was even more hazardous than usual but balanced against this was a shortage of drop tanks at the base.

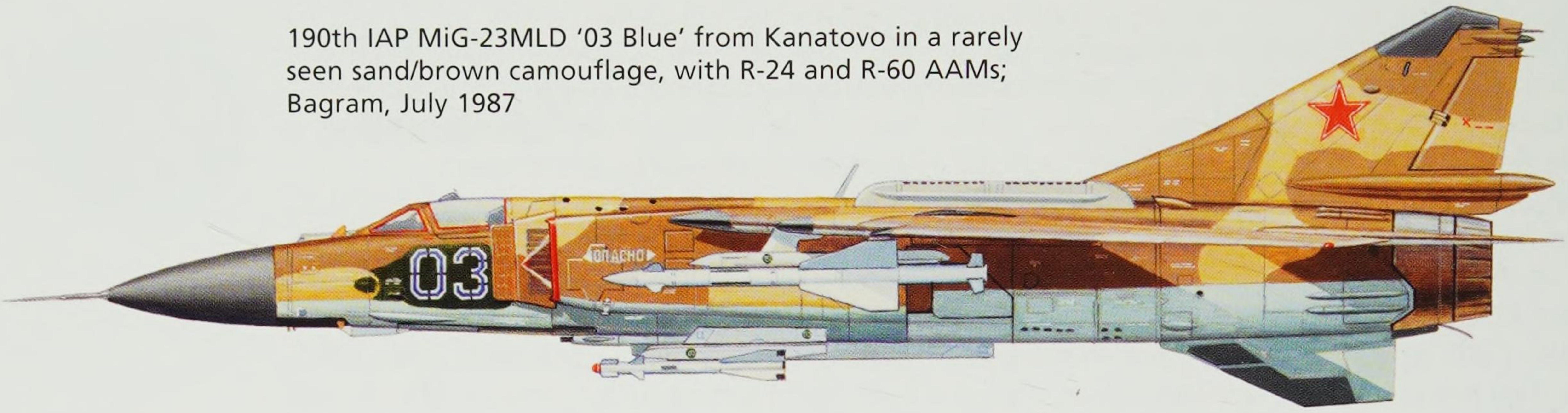
No Su-24s were lost to enemy action in Afghanistan. This was partly due to the fact that, except in dire emergencies, the *Fencers* did not operate below 7,000 m (22,965 ft) over 'Indian country'. However, one 735th BAP Su-24 acting as a communications relay aircraft for the strike group was lost in a fatal landing accident at Khanabad on 18th December 1988. In a stiff crosswind the aircraft veered off the runway and one of the main undercarriage units collapsed, rupturing a fuel line. A massive fire ensued from which the pilot managed to escape unhurt but the weapons systems operator's canopy door jammed and the WSO suffered massive burns, dying later in hospital.

The need to ensure good co-operation with the ground forces and avoid 'friendly fire' incidents highlighted the importance of aerial

MiG-23MLD '99 White outline' armed with FAB-100 bombs on MERs.

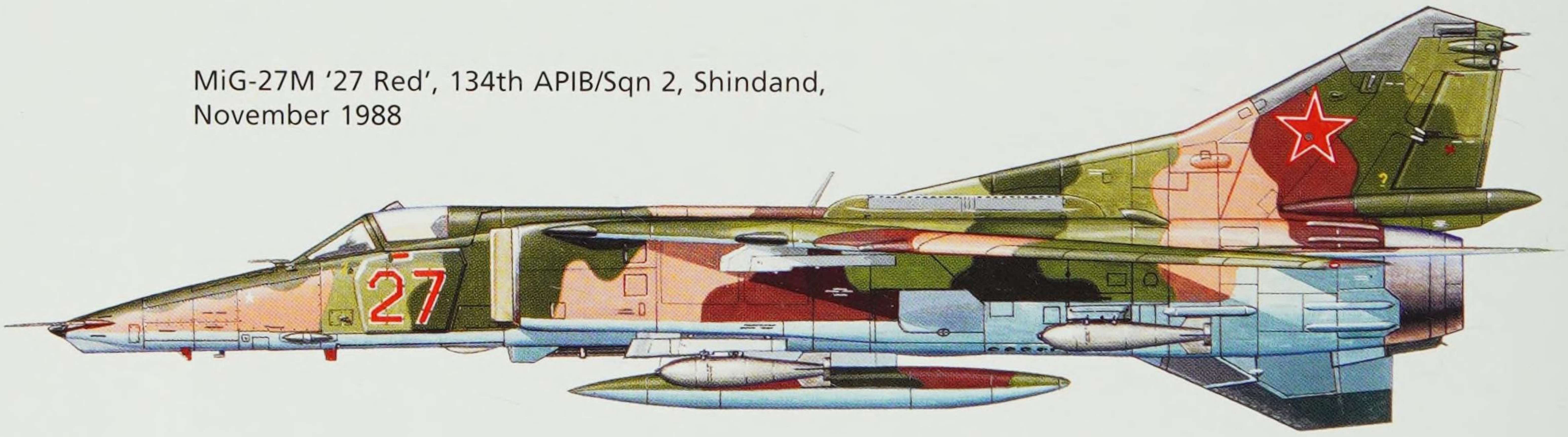


905th IAP MiG-23ML ‘36 White outline’ with KMGU-1 pods, Bagram, July 1985; note the 37 mission markers indicating 370 sorties flown within 12 months

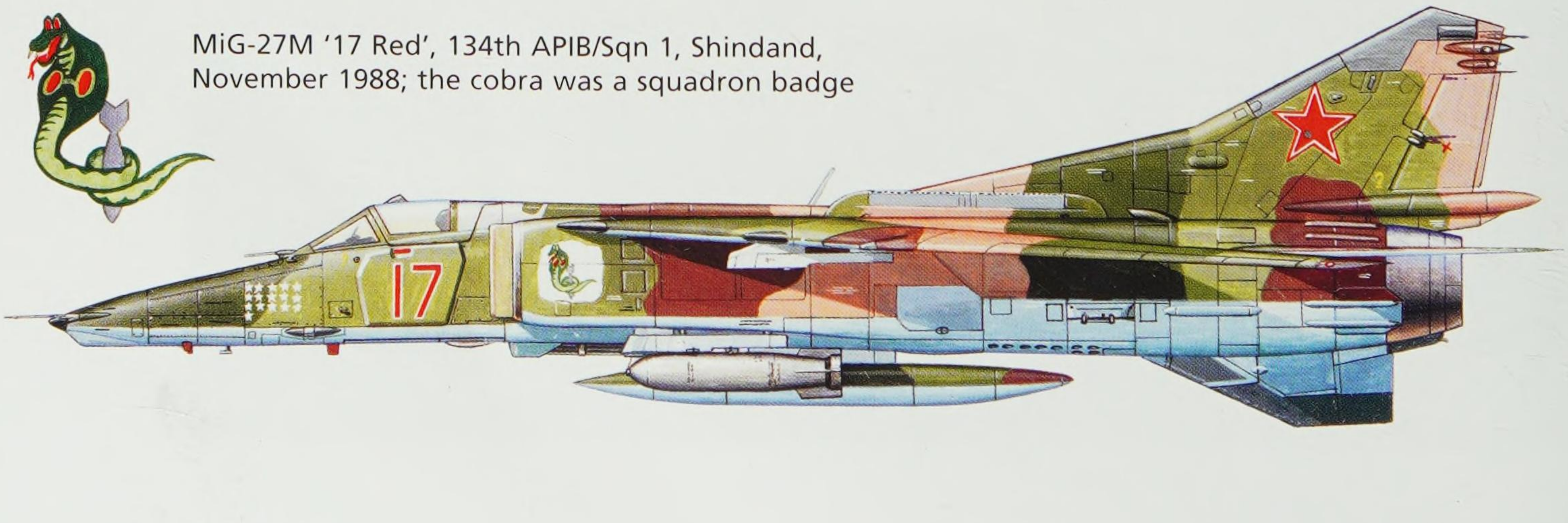


190th IAP MiG-23MLD ‘03 Blue’ from Kanatovo in a rarely seen sand/brown camouflage, with R-24 and R-60 AAMs; Bagram, July 1987

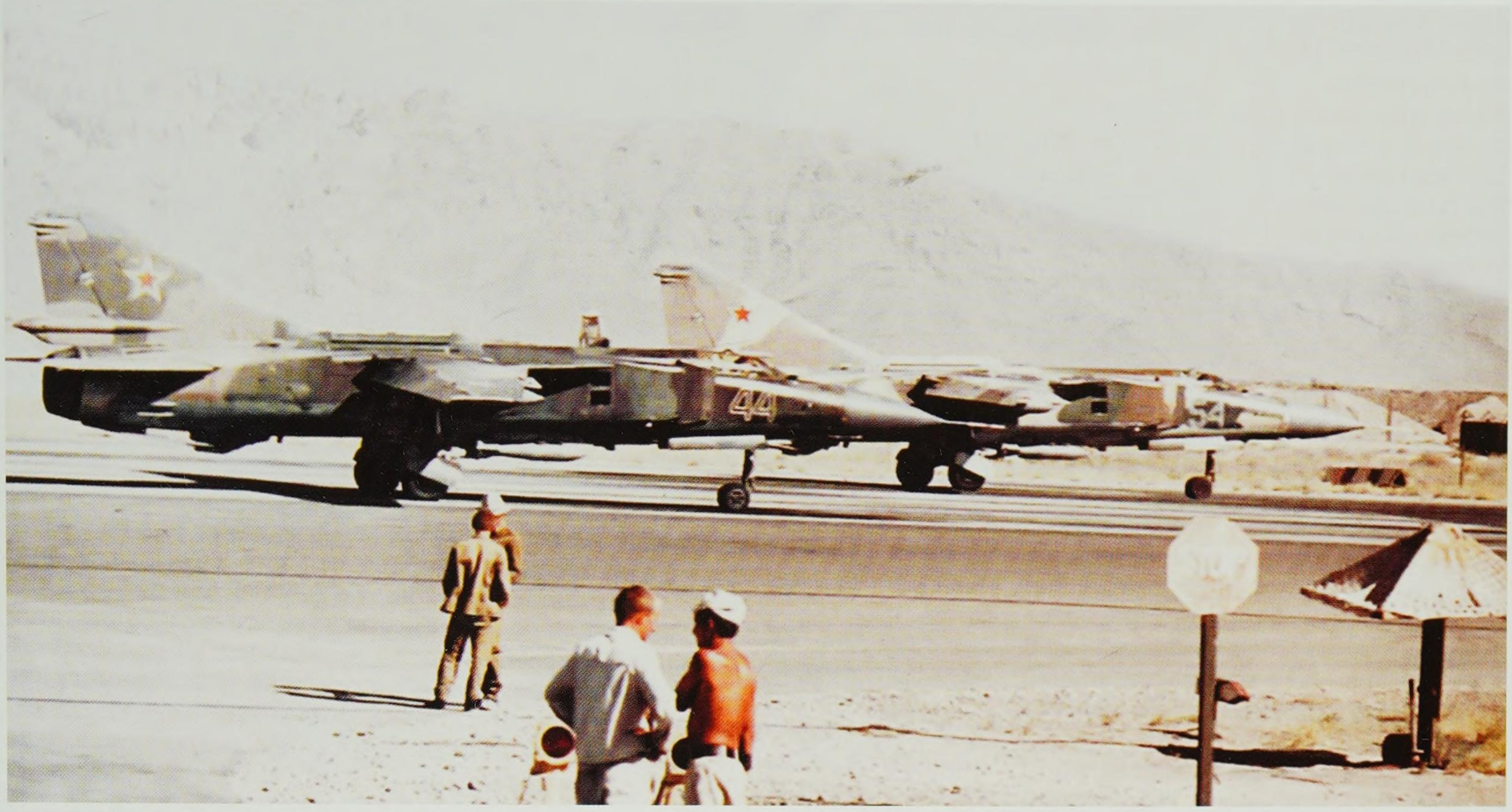
reconnaissance. The techniques changed as the war progressed. As a rule, recce missions – whether pre-planned or on-call – were flown by pairs of aircraft for safety reasons (if one was shot down, the pilot of the other could call in CSAR helicopters by radio). While all aircraft could serve for this or that kind of reconnaissance (visual observation, PHOTINT or ELINT) in case of need, the mission was mostly handled by specialised units. The principal one was the 263rd ORAE (*ot**del’**naya raz**ved**yvatel’naya **a**viaeskad**ril’**ya* – Independent Reconnaissance Air Squadron) based at Bagram – an *ad hoc* outfit to which personnel from independent reconnaissance air regiments was assigned on a rotational basis, the fleet initially changing only due to attrition replacements.



MiG-27M ‘27 Red’, 134th APIB/Sqn 2, Shindand, November 1988



MiG-27M ‘17 Red’, 134th APIB/Sqn 1, Shindand, November 1988; the cobra was a squadron badge



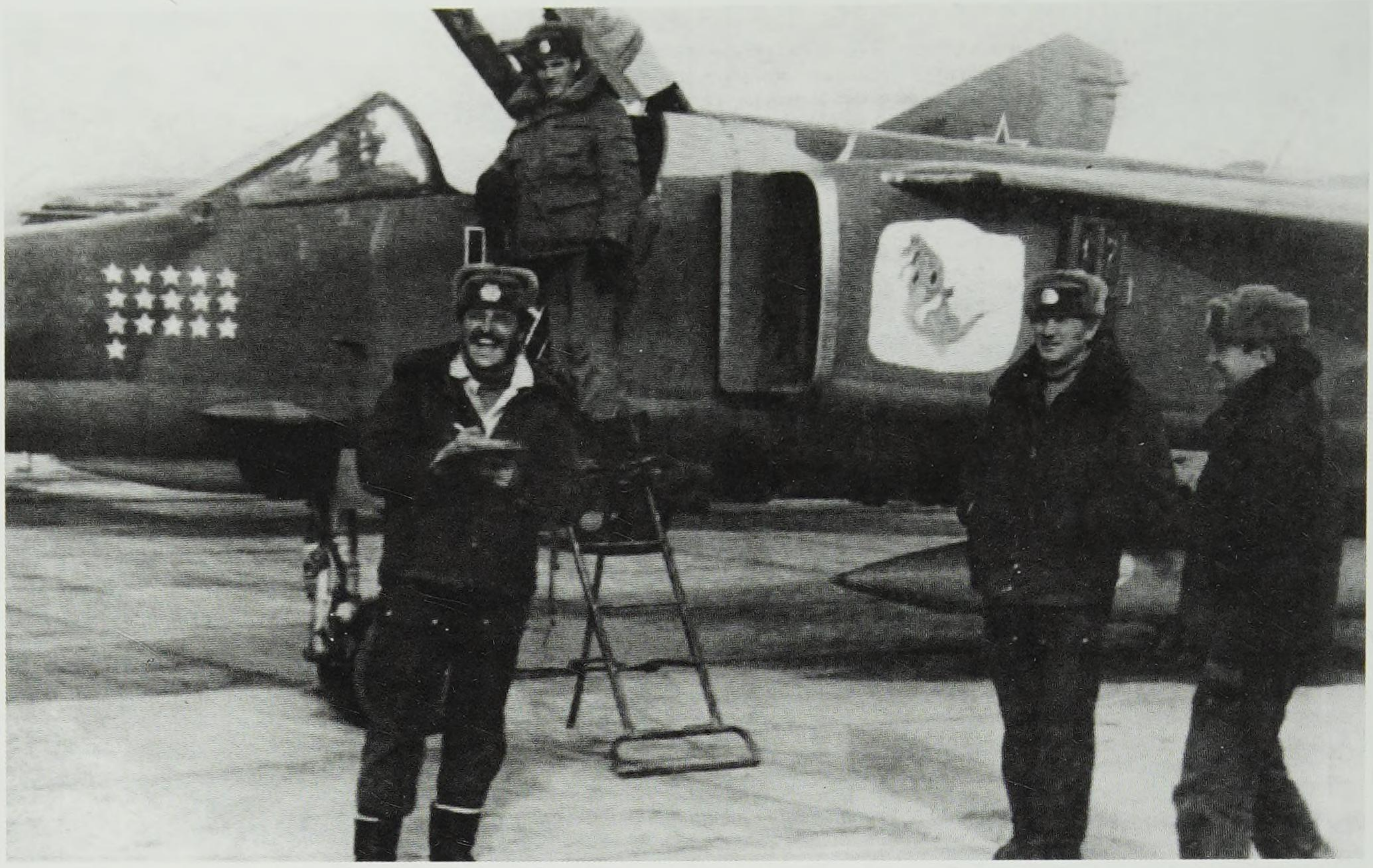
A pair of MiG-23MLDs carrying low-drag bombs taxies out for a mission. The 'mushroom' in the foreground is the sentry's post.

Initially the 263rd ORAE was equipped with MiG-21R *Fishbed-H* aircraft carrying a Type D daylight PHOTINT pod (the D stood for *dnev**na**ya* ***fot**oraz**ved**ka*), a Type N night PHOTINT pod (N for *noch**na**ya* ***fot**oraz**ved**ka*), a Type R ELINT pod (R for ***rah**diotekh**nich**eskaya raz**ved**ka*) or the TARK-2 television reconnaissance system. Additionally, ten MiG-21Rs were operated by a squadron of the 87th ORAP at Kandahar. MiG-21Rs took part in 'free chase' sorties – especially night ones – against Mujahideen supply convoys. On such missions, they carried drop tanks and two RBK-250-270 cluster bombs or two to four S-24 heavy unguided rockets. Reconnaissance aircraft also were used at night, illuminating target areas with SAB-100 or SAB-250 flare bombs for other aircraft attacking ground targets. The 40th Army's aircraft flew 10,860 reconnaissance missions, of which 2,708 were conducted by the 263rd ORAE (an average of 156 sorties per pilot) and 8,125 by other units (an average of 35 sorties per crew). 607 sorties were made for the purpose of ELINT, developing radar operations in a whole number of Pakistani urban areas. Six of the MiG-21Rs were lost to ground fire in the course of the war.

Later the *Fishbed-Hs* were superseded by Su-17M3R reconnaissance aircraft carrying a KKR-1/T or KKR-1/2 pod with vertical, oblique and panoramic cameras, as well as infra-red and ELINT sensors, which saw large-scale use in the Afghan War.

The reconnaissance aircraft also carried weapons, striking at targets of opportunity in the area they covered. The lead aircraft typically carried two S-24 rockets to complement the camera pod and the wingman was armed with four S-24s or bombs. In the deep narrow ravines the pair maintained a separation of 200-400 m (660-13,120 ft), the wingman following his leader in a 10° to 15° dive. The positions of the aircraft in the pair depended on the sun and the possible directions of Mujahideen fire. The leader dived, while his wingman kept a vigil from a height of 1,000-1,800 m (3,280-5,900 ft) and warned him of any danger. When targets were detected, a repeat pass was made to photograph them.

In some parts of Afghanistan 'free chase' sorties were flown by pairs of Su-17M3Rs which, if they came across a convoy, reported by radio and attacked it once they had received permission. In the Kandahar region, on the Havak mountain passes (between Panjshir and the Andarab Gorge) and Lakarai, crews were authorised to destroy suspicious convoys without requesting permission. The pair was equipped as follows: the lead aircraft carried a KKR-1 pod (with an A-39 or AFA-42/100 camera) and two PTB-800 drop tanks; sometimes two 100-kg or 250-kg HE bombs or two UB-32 FFAR pods were also carried. The wingman carried four to six 100- or 250-kg bombs or two or four UB-32 pods, as well as two drop tanks. He only carried a KKR-1 pod when particularly important mis-



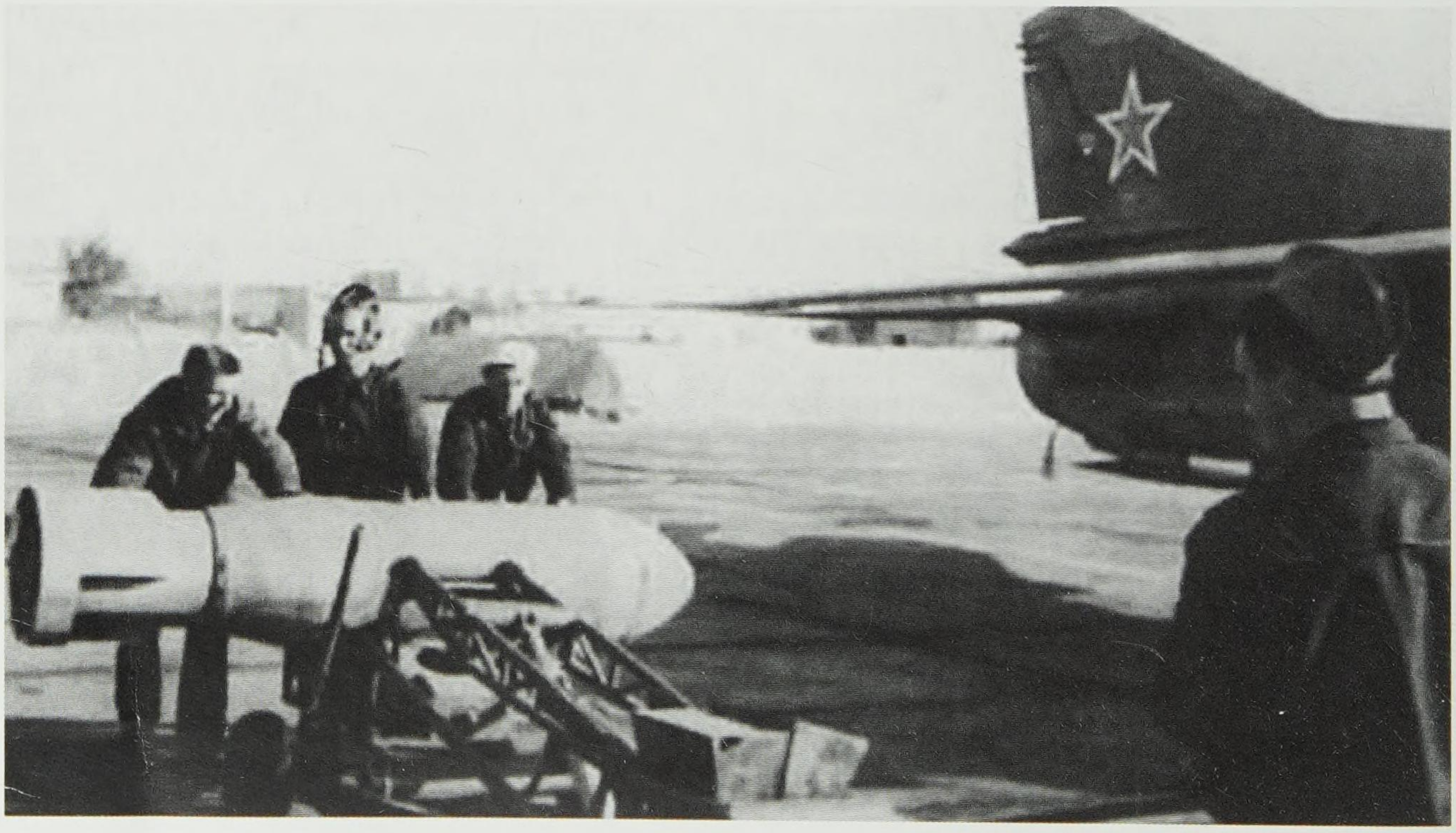
134th APIB officers with MiG-27M '17 Red'. Note the 'cobra' squadron badge, the 16 mission markers and the false second cockpit painted on to disguise the jet as a MiG-23UB.

sions necessitating a backup for the flight leader's work required it.

Once or twice a week the Su-17M3Rs of the 263rd ORAE flew ELINT missions close to the Iraqi and Pakistani borders. Several routes were flown, one involving a refuelling stop at Shindand. Usually the wingman followed at a five-minute interval and 500 m (1,640 ft) below his leader, who released IRCM flares from time to time to indicate his position.

In the summer of 1980, when operations intensified, two or three pairs of reconnaissance aircraft were included in strike groups. The weapons used were 250- or 500-kg bombs or B-8 FFAR pods with an overall weight of up to 1,000 kg (2,205 lb). Bombing was carried out in a 25-30° dive. At first bombing accuracy was unsatisfactory, but this greatly improved with experience, the circular error being no more than 30-40 m (100-130 ft). Formations were tighter on bombing strikes than on reconnaissance sorties, the distance between the aircraft not exceeding 150 m (490 ft). In February 1987 a pair of 263rd ORAE Su-17M3Rs acted as target illuminator aircraft, dropping flare bombs for a group of 12 Su-17M3s from the 136th APIB making a night raid on a target east of Kandahar.

A classic example of a reconnaissance/strike operation was a sortie carried out by



Armourers use a bomb lift to hook up an ODAB-500P fuel/air explosive bomb.

Su-17M3R aircraft against a Mujahideen convoy in the Maidanshakr area. The final phase in this operation was a strike by a group of Su-17M3 fighter-bombers and Su-25 attack aircraft, which destroyed some 60 vehicles carrying munitions, fuel and other supplies. When the Su-17M3Rs detected a concentration of vehicles in the Maidan Gorge, a strike group comprising two flights of Su-25s and a pair of Su-17M3s was scrambled. The *Fitters* were the first to arrive, marking the target and then circling above the Su-25s to provide target spotting and alerting the attack aircraft to ground fire. When the Su-25s had done their work, the Su-17M3s made their strike, with a Su-17M3R photographing the attack results. All aircraft returned safely to base.

Flying the reconnaissance missions was risky business. Of the 33 Su-17s lost in Afghanistan, more than a third – 13 aircraft – were Su-17M3Rs from the 263rd ORAE.

The Yak-28R PHOTINT aircraft was also actively involved in the Afghan War; in fact, *Brewer-Ds* flew their first sorties over Afghanistan some time before Soviet troops entered the country on 25th-28th December 1979. Until April 1980 the type was operated by two units on the Afghan theatre of operations – the 87th ORAP based at Kokaïdy AB near Karshi and a group of 39th ORAP aircraft on temporary deployment to Maryy-2 AB (both places are in Turkmenia). After that, the 39th ORAP aircraft returned to its home base at Balkhash, but the other unit continued operating into Afghanistan until the Yak-28R was supplanted by the Su-24MR ELINT aircraft in 1986-87. On the Afghan TO the *Brewer-D* was scathingly nicknamed ***gol****oob'* ***mee****ra* (Dove of Peace) because it was unarmed.

Another important reconnaissance asset in Afghanistan was the An-30B *Clank* photo survey aircraft. Up to three such aircraft sourced from various 'non-combatant' Air Force units served with the 50th OSAP at Kabul (the first An-30B was seconded from the 86th ODRAE as early as November 1981). This made it possible to relieve the tactical reconnaissance aircraft of certain tasks that would entail wasteful use of available forces. Yet, the slow turboprops were never regarded as a universal substitute for the MiGs and Sukhois, if only because the An-30s were unarmed and could not promptly strike at a discovered target before the combat aircraft or helicopters with landing parties arrived on the scene.

It took some time to arrive at a rational distribution of the workload between the reconnaissance/strike jets and photo survey aircraft. The range of the An-30 crews' main tasks took shape gradually. On the Afghan TO the An-30Bs fulfilled the following missions:

- photo mapping (since most of the available maps proved to be hopelessly outdated);
- visual observation;
- guiding combat aircraft to targets during large-scale operations or to visually acquired targets ('attacks by request');
- prior and post-strike photo reconnaissance;
- photographing possible landing zones for heliborne assault operations;
- photographing large areas for the purpose of revealing unknown targets or corroborating intelligence from other sources;

A Su-24 from one of the units operating into Afghanistan.

- photographing avenues of approach during troop movements;
- during the Soviet withdrawal from Afghanistan, detecting potentially dangerous localities suitable for Mujahideen ambush and determining alternative exit routes for the troops if the main routes were unusable;
- SAR operations.

The An-30B's advantage was its reasonably long range of 2,600 km (1,620 miles) at altitudes above 6,000 m (19,680 ft); endurance at this altitude was 6 hours 10 minutes. Operating from Kabul, the aircraft could reach any point in Afghanistan; just 40 minutes after the aircraft returned to base, specialists could begin interpreting the photos. One more advantage was that virtually all crew members could perform visual observation, using field glasses. The cabin windows and camera ports afforded an almost all-round view. Each crew member had his own designated field of view. The aircraft's cruising speed was only half as much as that of reconnaissance jets, increasing the time available for a thorough visual examination of the locality below and identifying objects of interest. This obviated the need to make repeat passes over the targets, 'inviting' ground fire.

Initially the An-30B was equipped with one AFA-42/100 camera window and three AFA-54/50 cameras (one for vertical photography and two for oblique photography). However, these cameras and the A-72 long-range operations (LOROP) camera added later had two important shortcomings. One of them was a limitation as to the minimum alti-

For safety reasons the Su-24s delivered their strikes in Afghanistan from high altitude.

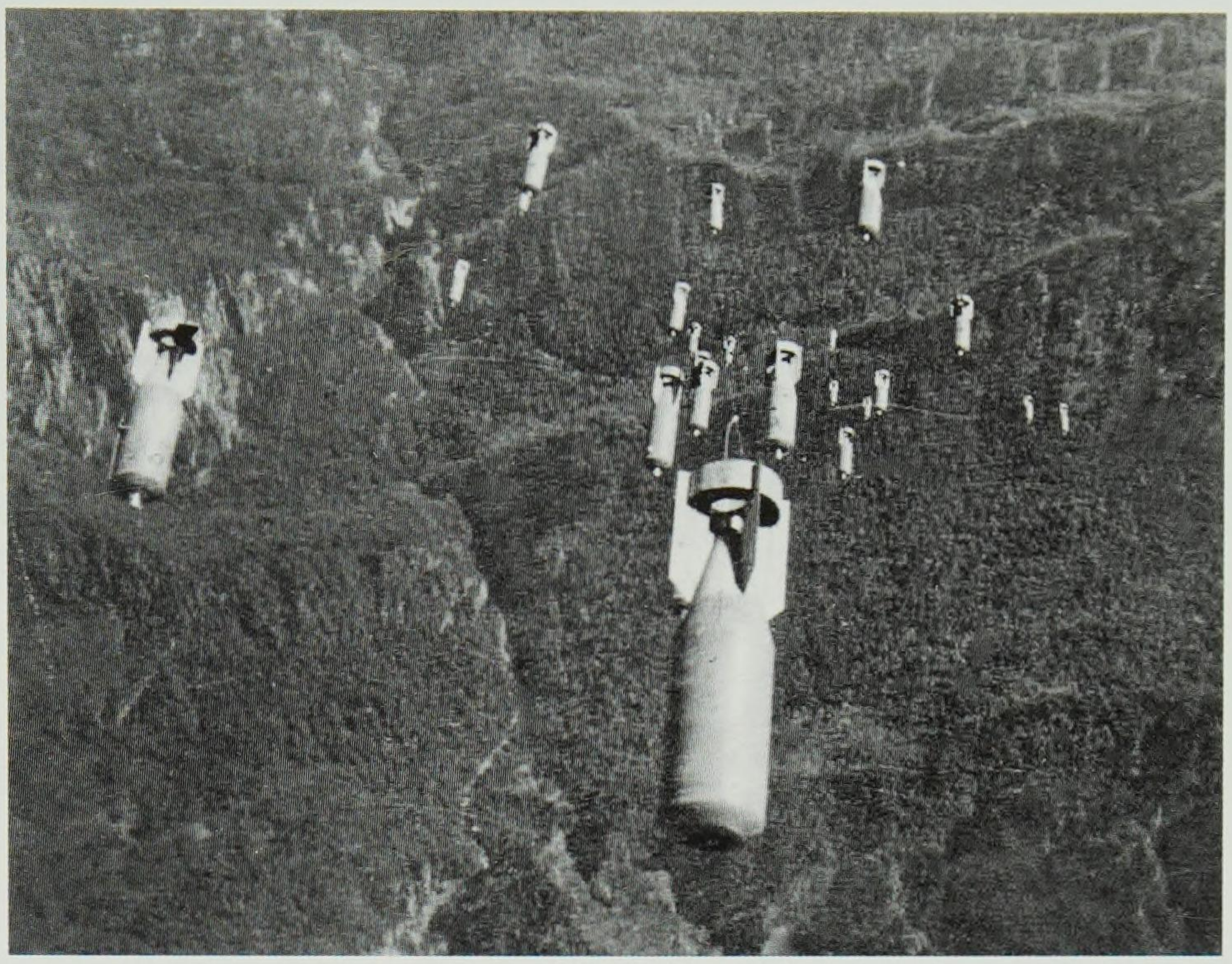
tude from which they could be used (1,500 m/ 4,920 ft for the AFA-54/0 and 2,100 m/ 6,890 ft for the A-72); the other was the insufficient width of the photographed strip. To remedy this, a decision was taken to use the proven AFA-42/20 camera which permitted low-altitude PHOTINT. However, as early as the beginning of 1984 the bolstering of the enemy air defences forced An-30B crews to raise the minimum operating altitude and revert to the original camera complement. In 1986, when the Mujahideen received large numbers of Stingers, the photo surveyers' minimum flight altitude above the locality reached 4,000 m (13,120 ft); from the spring of 1987 onwards it was raised to 5,000 m (16,400 ft), and subsequently it became still greater.

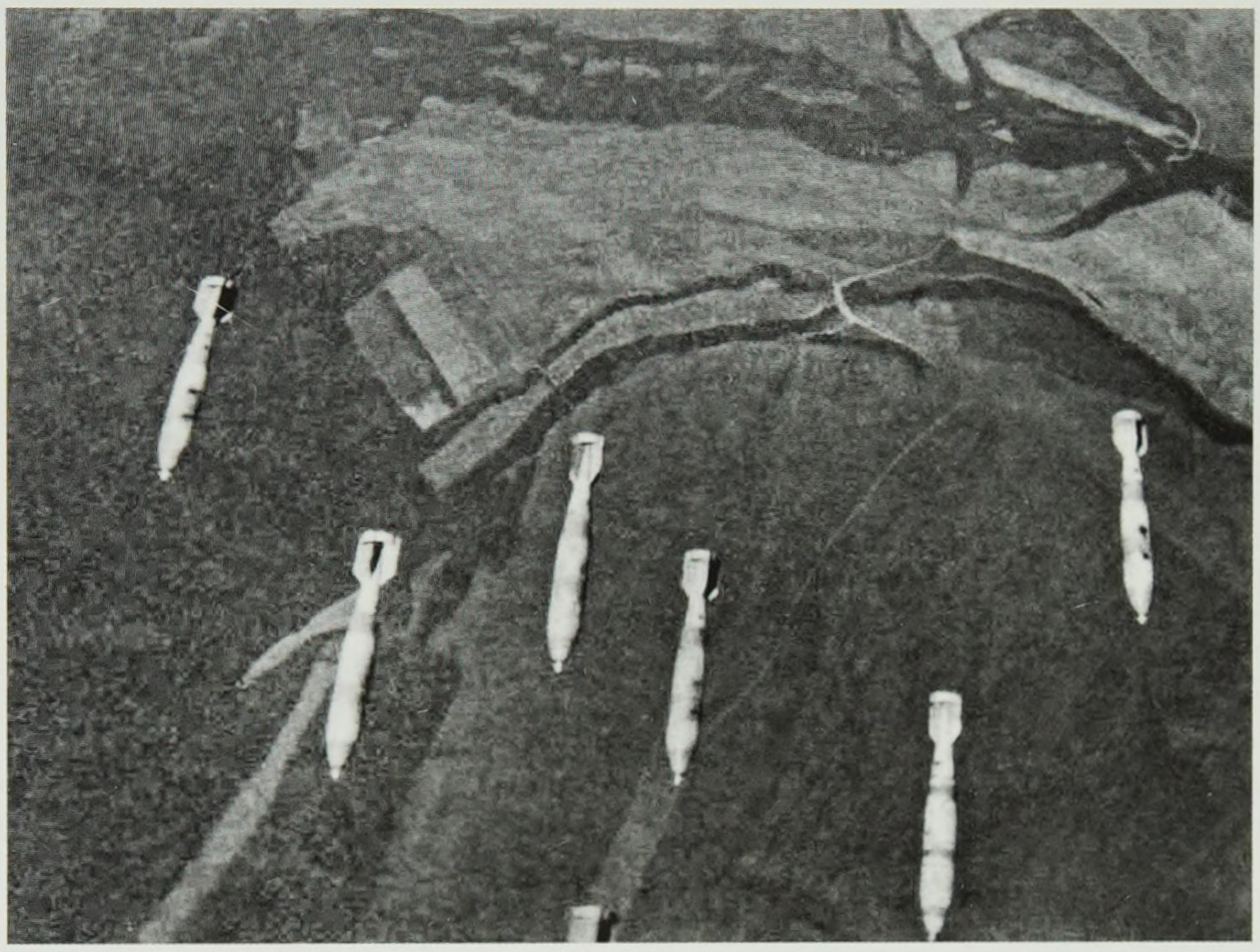
To cope with the missile threat the An-30B was equipped with two ***Vey**er* (Fan) chaff/flare dispenser pods holding a total of 384 PPI-26 IRCM flares. However, the bulky pods not only created drag but also adversely affected directional stability during the photo run. Hence some machines were fitted with conformal packs of six ASO-2B dispensers with the same number of flares. Each crew member was to watch a certain sector for the purpose of detecting a missile attack in timely fashion. The flares were fired during take-off and landing, and when flying over areas where missile attacks were likely. Nevertheless, on 11th March 1985 an An-30B from the 50th OSAP was shot down by a MANPADS over the Panjshir Valley, crashing at Bagram; most of the crew parachuted to safety.

One more special mission aircraft extensively used in Afghanistan was the An-26RTR (***rah**diotekh**nich**eskiy raz**ved**chik* – ELINT aircraft) equipped with the highly classified *T**aran*** (Battering ram) ELINT suite enabling it to discover and pinpoint the enemy's field radio communication assets and record their traffic. The mission crew included interpreters, which made it possible to take timely decisions about attacking the Mujahideen groups whose bearings had been taken. On one occasion the crew of the electronic eavesdropper saved the crew of an An-30B operating in the same area near the border south-east of Jalalabad by giving timely warning of an impending attack by Pakistani fighters.

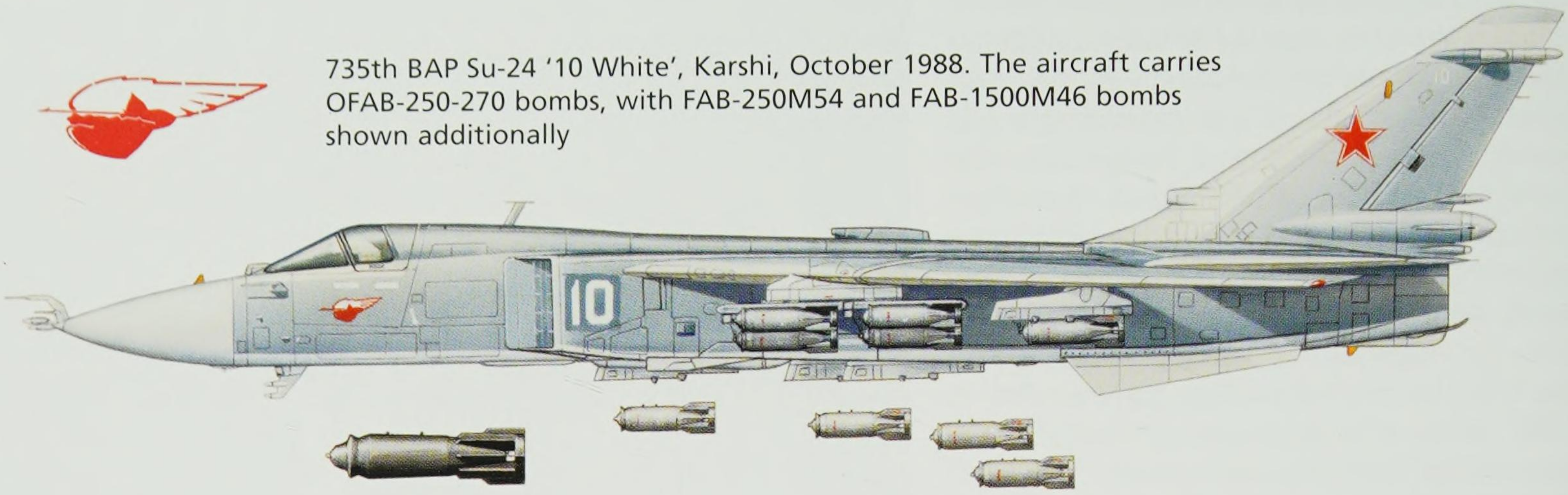
In the mountainous terrain of Afghanistan restricting the range of stationary or vehicle-mounted radios, summoning help or directing attack aircraft to provide CAS proved virtually impossible without the use of the An-26RT communications relay aircraft, which saw service with the 528th OSAE. At least one such aircraft was constantly airborne in the combat area, occasionally logging up to ten hours in the air per day. In the course of 1980 alone the relay aircraft performed 620 flights for the purpose of ensuring control of the troops, logging a total of 2,150 hours. On 1st March 1980 an An-26RT flying at 6,000 m (19,680 ft) was attacked by Pakistani fighters east of Jalalabad. A pair of Soviet MiG-21 scrambled from Bagram to ward off the attackers; the incident ended without losses for either side.

In 1986 the An-26RT relay stations and the An-30Bs of the 50th OSAP were merged into the 2nd Special Mission Air Squadron. Together with the 528th OSAE this squadron took part in all major operations undertaken

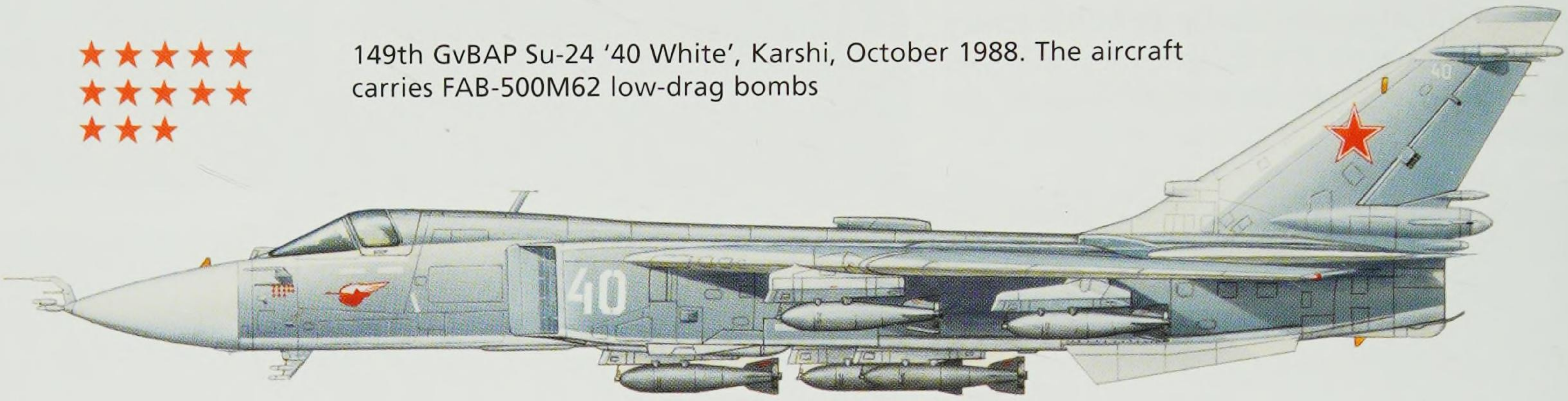




Bombs away! A strike camera shows high-drag (top) and low-drag bombs being released by the Su-24.



735th BAP Su-24 '10 White', Karshi, October 1988. The aircraft carries OFAB-250-270 bombs, with FAB-250M54 and FAB-1500M46 bombs shown additionally

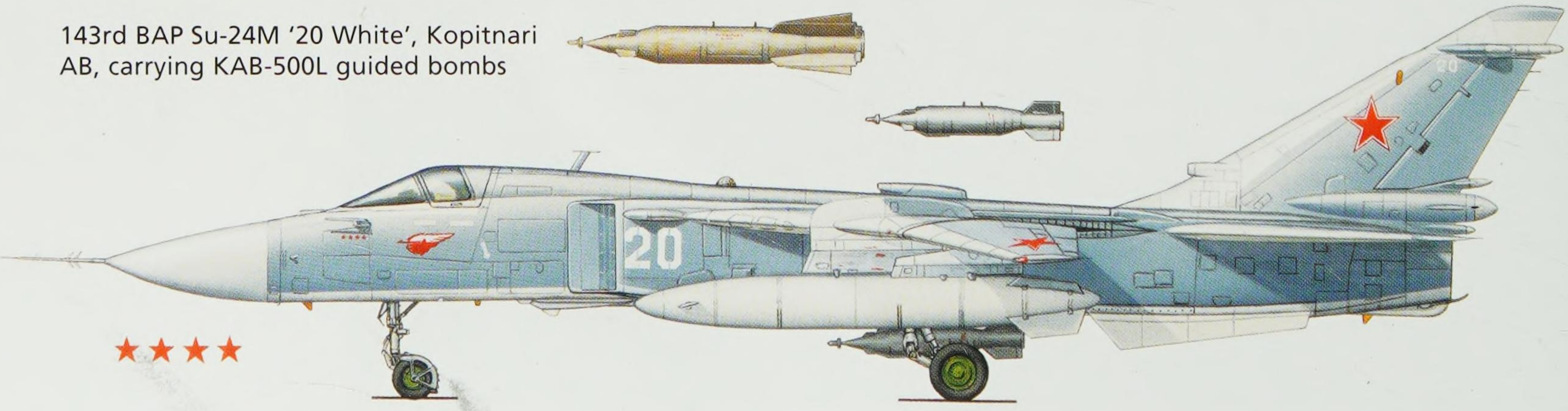


149th GvBAP Su-24 '40 White', Karshi, October 1988. The aircraft carries FAB-500M62 low-drag bombs

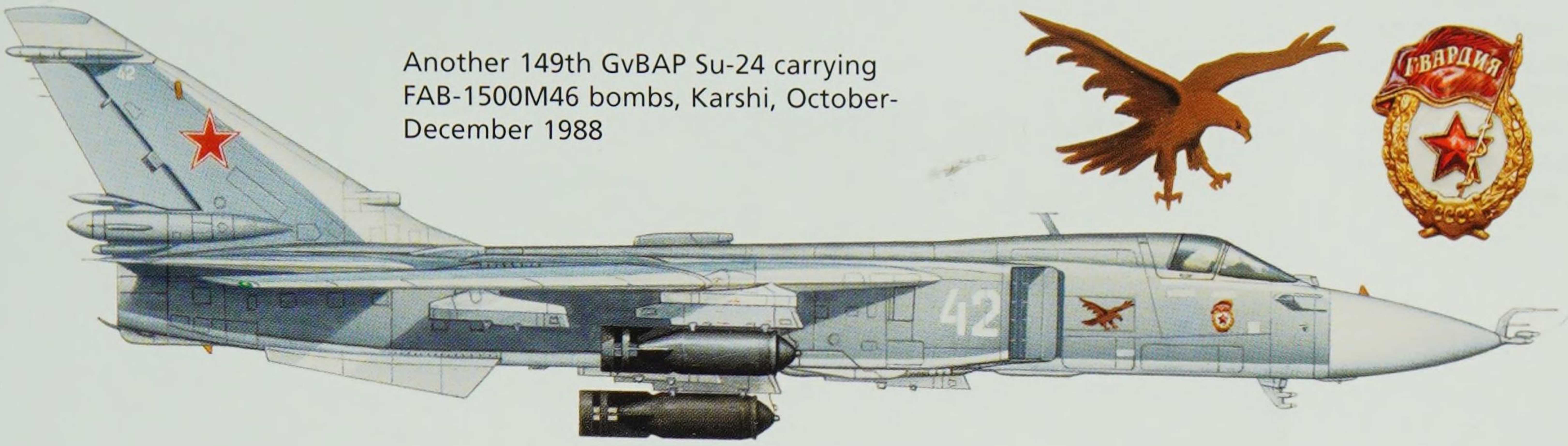
by the ground troops right to the moment of the Soviet pullout from Afghanistan. On 26th December 1986 an An-26RT was hit by two Stinger missiles at an altitude of 8,000 m (26,250 ft), which had hitherto been considered absolutely safe. Only the flight engineer was unable to bail out; the rest of the crew parachuted to safety.

Another important mission was transportation of troops and cargo. Most of the heavy haulage was done by IL-76MD transports from the so-called Composite Flight Detachment (SAO – ***Svod****nyy* ***a****viaot****ryad***) of the Uzbek Civil Aviation Directorate at Tashkent-Toozel' airfield and from Military Transport Aviation (non-40th Army) units operating into Afghanistan from Khanabad AB and Kokaïdy AB. However, the 50th OSAP based at Kabul International airport and originally intended only for supporting the activities of Soviet military advisors took part in virtually all major operations conducted by the 40th Army.

During the initial period of the war the regiment had four An-26 light tactical transports and four An-12BK *Cub* medium transports on strength, in addition to 12 Mi-8 transport helicopters, 12 Mi-24 assault helicopters and 16 MiG-21PFM fighters. The transports delivered personnel, ammunition and fuel to other bases in Afghanistan; they also had the sordid job of carrying back wounded personnel and dead bodies. Later, the regiment came to include several An-24 *Coke* airliners which performed courier flights. During the ten years of the war the unit's An-24s and An-26s visited all of the 40th Army's permanent airbases.



143rd BAP Su-24M '20 White', Kopitnari AB, carrying KAB-500L guided bombs


Another 149th GvBAP Su-24 carrying FAB-1500M46 bombs, Karshi, October-December 1988

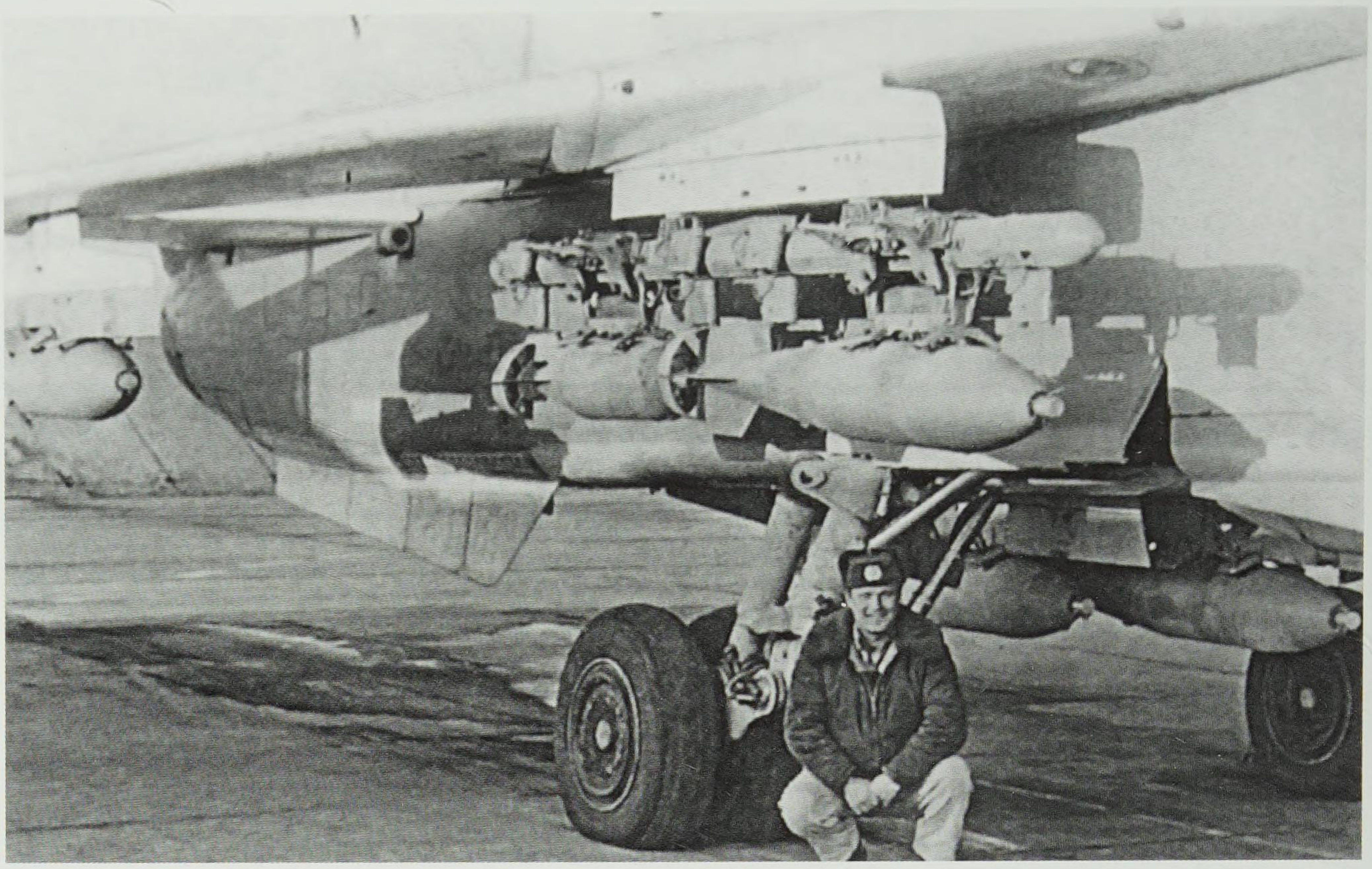
Additionally, the 10th SAP equipped mainly with An-26s and catering for the needs of the 40th Army's command element was based at Bagram in 1984-88. The 528th OSAE also operated in support of Soviet military advisors in Afghanistan. These two units operated regular An-26 transports, An-26RT and An-26RTR special mission aircraft, plus up to three An-30B photo survey aircraft, as well as Mi-8MT helicopters.

The airlift component of the 40th Army also had its share of combat losses. For example, on 17th June or 2nd July 1983 a 50th OSAP An-12 was shot down by HMG fire while taking off from Jalalabad, with the loss of all on board. Of the transport aircraft used in the Afghan War the An-26 suffered the highest attrition, primarily because it was used in greater numbers than the rest. Thus, in late October 1987 the Mujahideen guerrillas succeeded in shooting down a 50th OSAP/2nd Sqn An-26 coming in to land at Jalalabad. A few months later the same fate befell an An-26 which was departing Bagram airfield after bringing 40th Army Commander Gen. Boris Gromov from Kabul. Overall, the Soviet Air Force lost ten An-12s and six An-26s in Afghanistan; however, some of the *Cubs* were non-40th Army aircraft operated by the 194th OVTAP from Fergana, Uzbekistan, and the 930th VTAP from Zavitinsk, Chita Region.

Flights to airbases located near the borders with Pakistan and Iran posed great danger. The town of Khost, the centre of an Afghan province of the same name bordering with Pakistan, was completely surrounded by the Mujahideen, managing to hold its own only thanks to an 'air bridge' maintained by An-12 and An-26 transports. The local airfield surrounded by mountains on three sides was situated a mere 15 km (9 miles) from the Pakistani border, and the valley which was the only avenue of approach pointed in the direction of Pakistan. Hence Soviet crews had no choice but to keep close to the border when coming in, presenting themselves wide open for an attack by Pakistani F-16 fighters. In order to minimise the risk of shootdown, flights were performed at low level and at night, and different routes were taken each time to avoid being ambushed.

The Army Aviation component of the 40th Army – the helicopter units – proved equally important, shouldering a good deal of the workload in close air support and proving invaluable for heliborne assault and a number of other missions. In fact, of the 1,000,000-plus sorties flown by Soviet aircraft in the Afghan War, the choppers accounted for nearly 80%. In the difficult terrain of Afghanistan hampering the operations of fixed-wing aircraft, helicopters really came into their own. Of course, many of the crews were sent to the Afghan TO from the flatlands of European Russia, lacking experience of mountain operations with small and hard-to-access helipads (in particular, of picking a suitable landing pad in the mountains, which was vital if troops had to be inserted/extracted or if a forced landing was necessary). Again, special training courses had to be undertaken to remedy this.

735th BAP pilots pose with newly delivered FAB-1500M46 bombs at Karshi in December 1989.

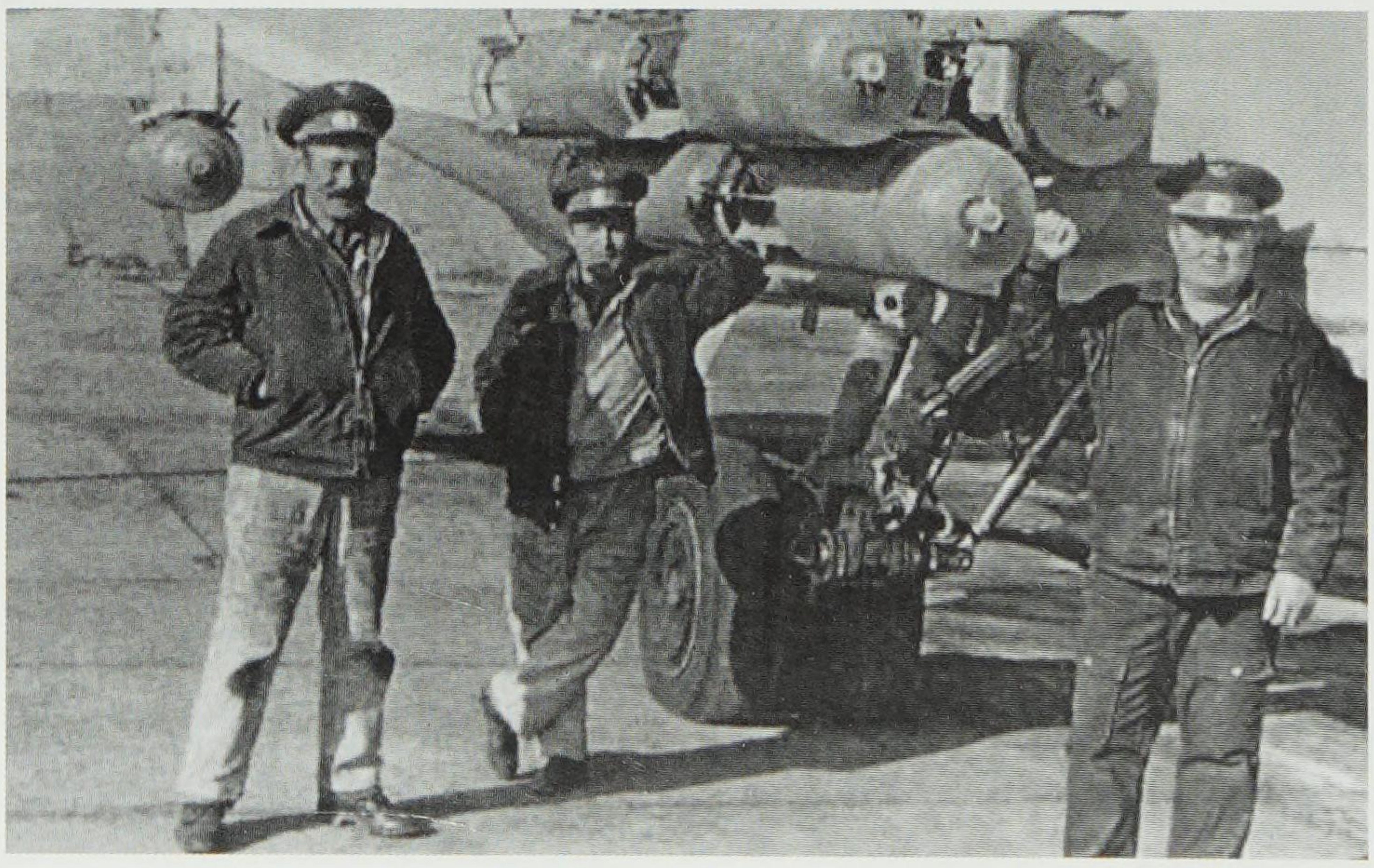


This Su-24 carries a combination of FAB-250M62 and OFAB-250-270 bombs (partly on MBD3-U6-68 racks).

In early 1981 the rotary-wing element of the 40th Army included six squadrons of Mi-8s, three squadrons of Mi-6s and four squadrons of Mi-24s.

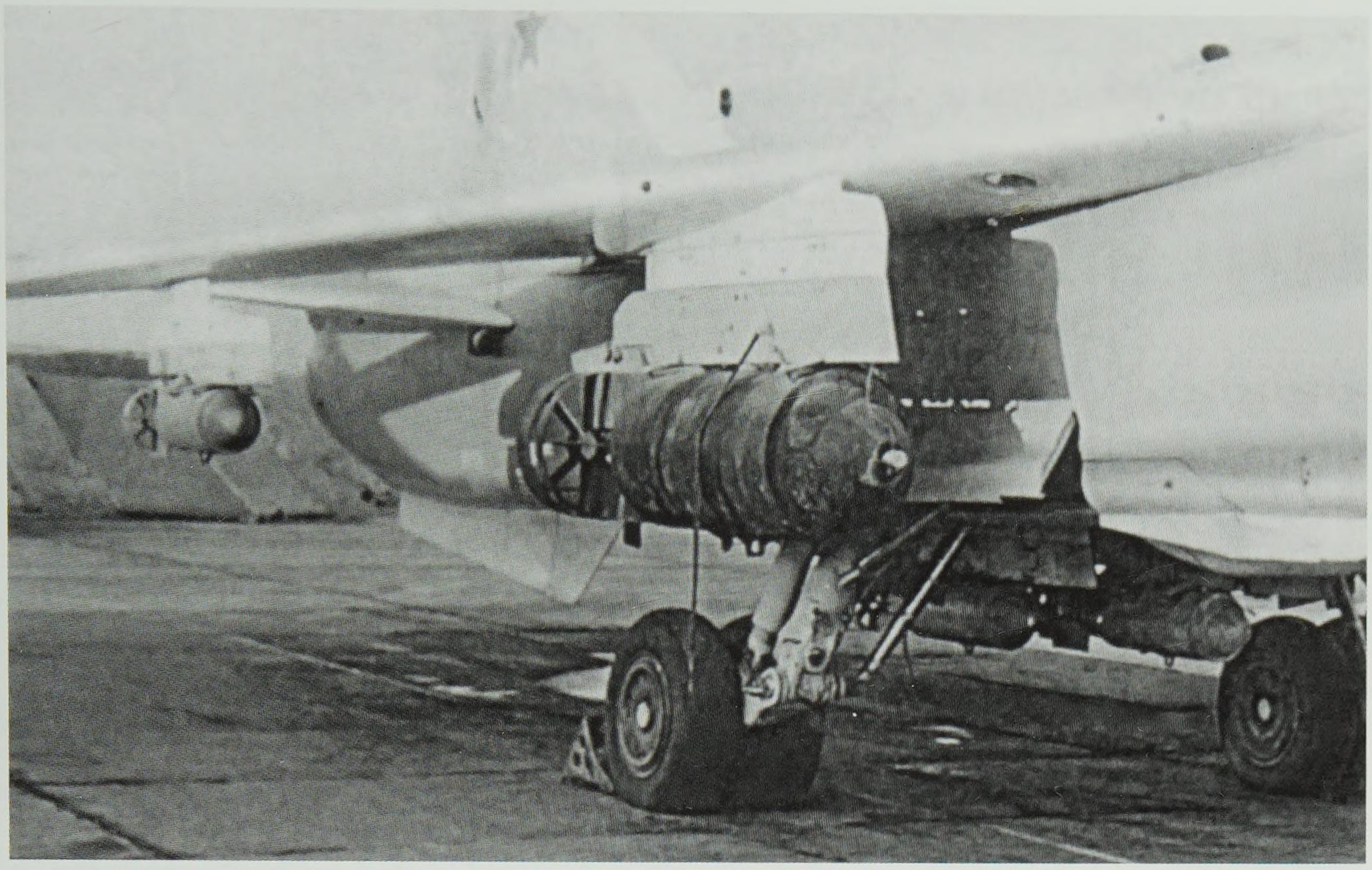
The most important rotary-wing type participating in the Afghan War was arguably the Mi-24 assault helicopter – the 'flying infantry fighting vehicle' with heavy armament and room for a detail of troops. A few Mi-24A *Hind-As* and Mi-25 *Hind-Ds* had been supplied to Afghanistan in April 1979, taking part in the Afghan Air Force took delivery of its first. The helicopters were immediately pressed into action against the incipient civil war. Starting in the spring of 1980, the lean predatory silhouette of the Mi-24 became an increasingly familiar sight in Afghan skies, and before long the mottled green 'crocodile' (as it was dubbed in the Soviet Army) was a true symbol of the war. The *Hinds* flew 'lower, slower and over shorter distances than anyone else', as their crews put it (paraphrasing a 1930s slogan, 'fly higher, faster and farther than everyone else'), but often were far more effective in the strike role than jet fighters and fighter-bombers which streaked over the target without having time to do any real damage, thereby earning the disdainful generic nickname of *svis**tok*** (whistle).

735th BAP technicians beside a Su-24 armed with OFAB-250-270s.



After the first encounters with the enemy and the first shootdowns the helicopters began working in pairs at the very least so that if one went down the other could provide cover for the downed crew. Usually, however, the Mi-24s operated in flights of four or groups of eight; this made for maximum strike efficiency in areas providing ample natural cover for the enemy. The Mujahideen returned fire whenever possible, so having strength in numbers allowed the helicopter crews to utilise many tactics which a pair might have found it impossible to use.

Speaking of tactics, these included the 'wheel of death'; the *kon**vey**er* (assembly line – or rather 'disassembly line'!) technique when the choppers approached in echelon formation and then consecutively turned head on to the target; and the innocuous-sounding *ro**mash**ka* (daisy) when the helicopters fanned out in all directions to intermittently pound the target from all directions at minimum intervals. To avoid AA fire, pairs of choppers would zigzag or fly a scissor pattern, alternately climbing and descending to complicate aiming



Here, big FAB-1500M46 bombs are carried on the wing glove pylons and FAB-100 bombs on the other pylons.

for Mujahideen gunners; the higher-flying pair would provide protection for the attacking one.

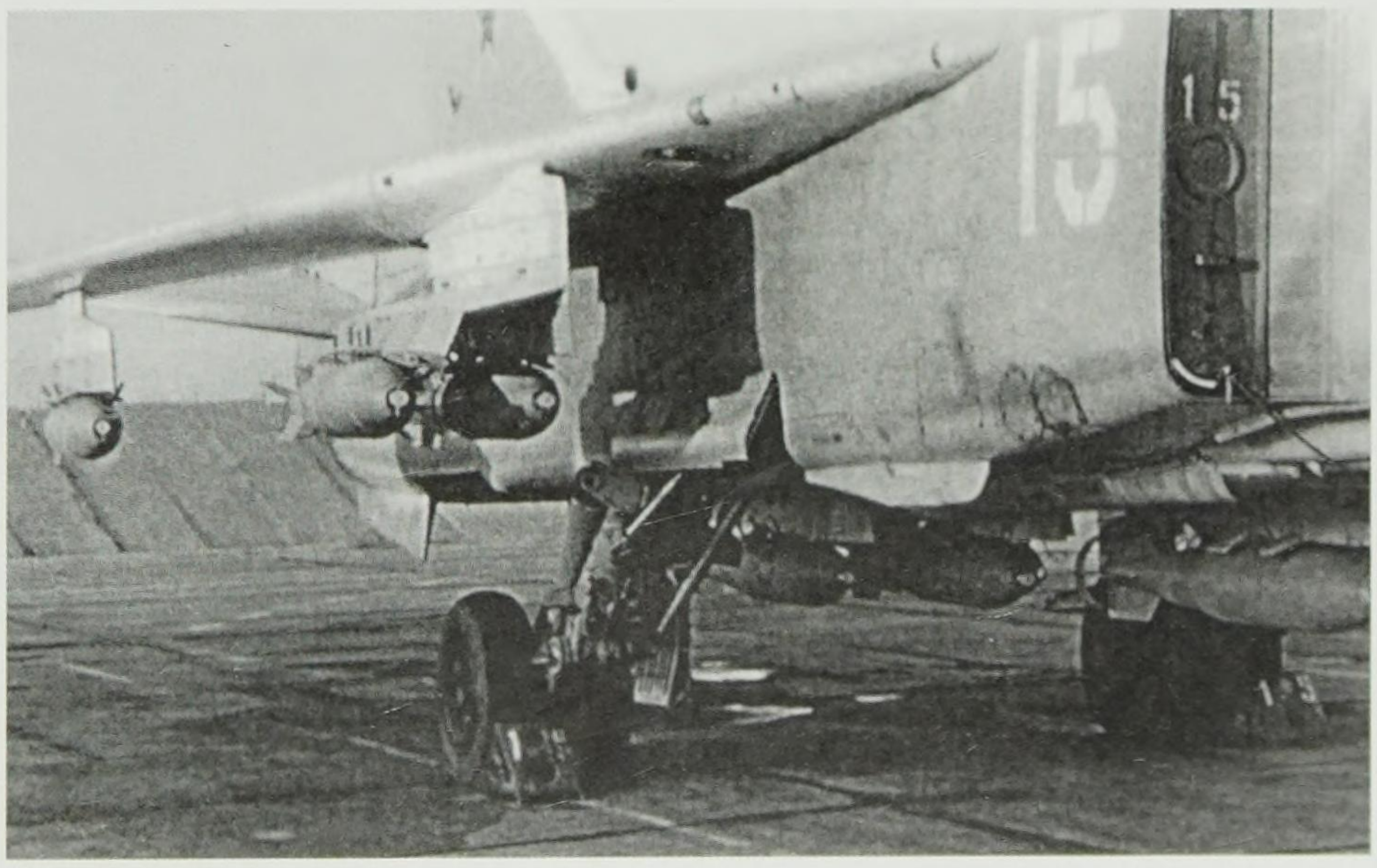
The main elements of *Hind* tactics were typical of the Soviet military philosophy: surprise action, uninterrupted engagement of the enemy to prevent him from regaining his wits and firing back, and mutual protection of the attacking forces. Mi-24 crews did everything to maximise the effect of their fire – sometimes to the detriment of flight safety; there were cases when the flight leader who had just finished a firing pass found his wingman's rockets whizzing past him on either side before he had time to get out of the way!

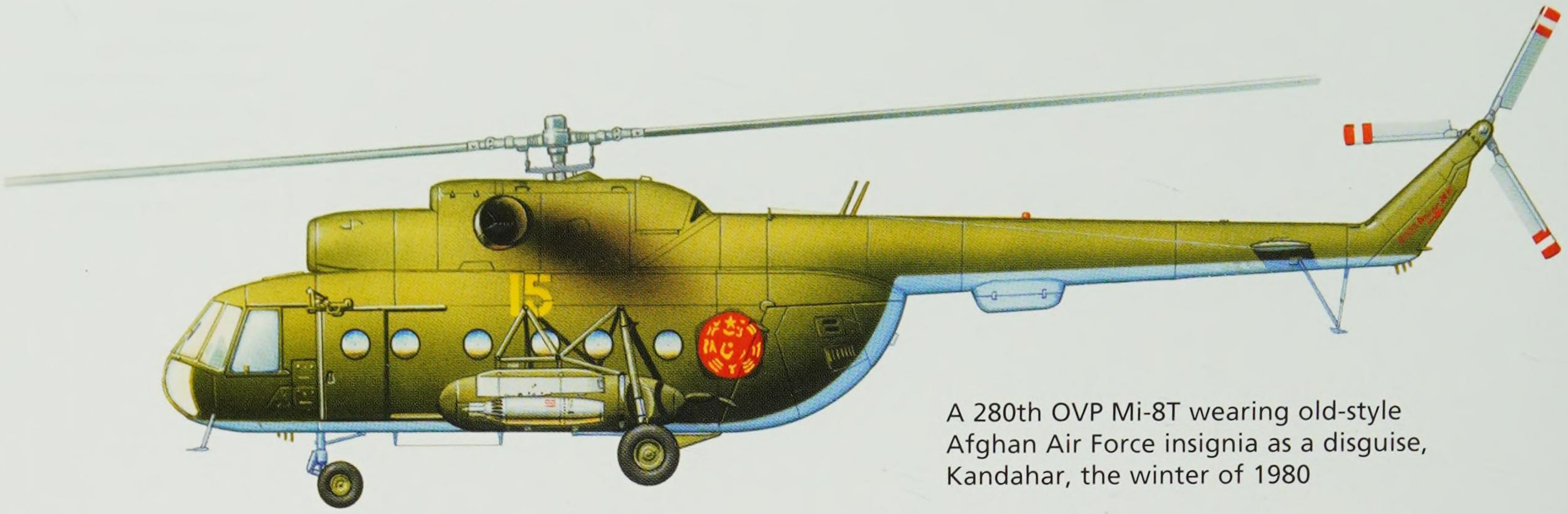
Flexibility in tactics and mission planning was all-important, as following a rigid routine immediately led to blows – even following the same avenue of approach twice could cause you to be ambushed. On the way to and from the target and on combat air patrol (CAP) missions the choppers in a pair maintained a separation of 1,200-1,500 m (3,940-4,920 ft) to avoid being hit by a single burst of ground fire; this gave the crews time to react, taking evasive action or retaliating right away.

Due attention was paid to combat manoeuvring during Mi-24 pilot training, and this was just as well. Many new flying techniques and manoeuvres invented in Afghanistan took the helicopter outside its normal flight envelope but allowed the crew to destroy the target more effectively – or saved them from being shot down. Apart from the customary turns and yo-yo manoeuvres, many skilled pilots practiced NOE flying to the target with a last-moment 3-G zoom climb to fire the weapons and a 50° climb after the firing pass, followed by a sharp turn with bank angles exceeding 90° for an immediate second attack.

The *Hind* was fast but its high speed had a price – rotor disc loading was 50% greater than the Mi-8's, which significantly impaired controllability in Afghanistan's extreme conditions (hot-and-high, plus lots of dust). Worse yet, the ingrained piloting techniques for normal conditions were often useless in Afghanistan and could even cause accidents. Because of the excessive rotor disc loading, sharp stick (cyclic) movements would cause the helicopter to sag; the pilot would then pull collective, trying to keep the chopper airborne, but the engines weakened by the hot-and-

A Su-24 loaded with FAB-250M62 ow-drag bombs.





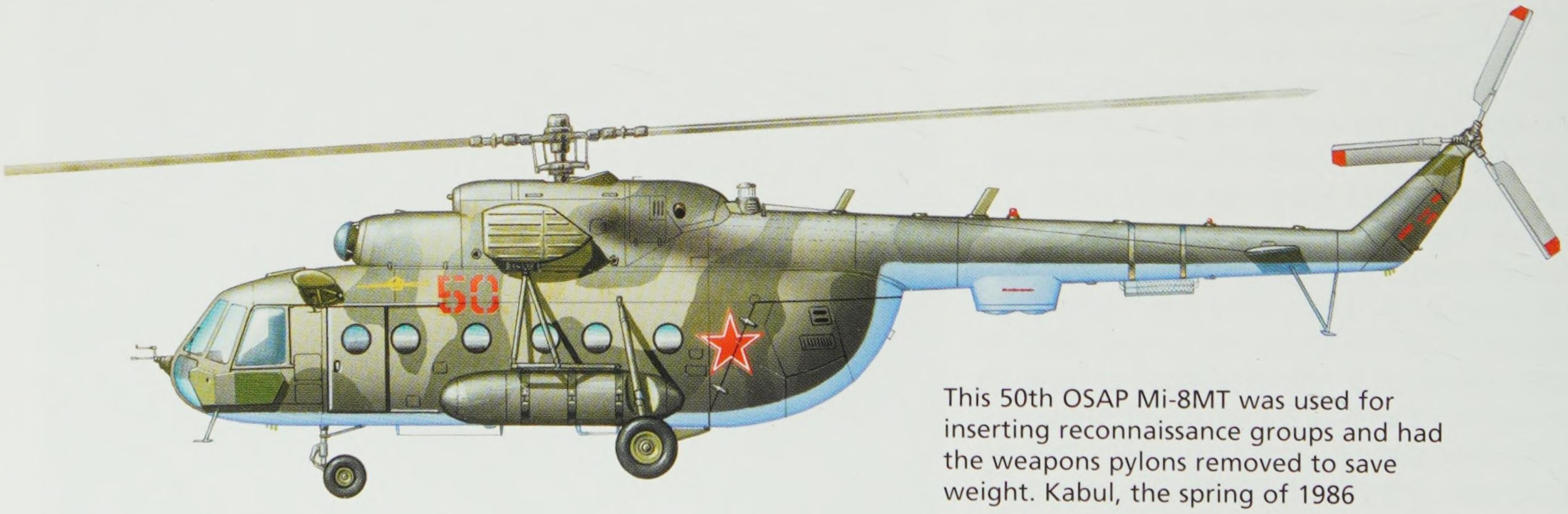
A 280th OVP Mi-8T wearing old-style Afghan Air Force insignia as a disguise, Kandahar, the winter of 1980

high conditions could not accelerate quickly enough and the result would be an unceremonious landing.

At low speed or at low altitude, where the frequent ground winds came into picture, the *Hind* would start 'acting up'. Because of inadequate directional control the tail rotor would try to pull the helicopter into an uncommanded left turn and at worst could cause it to flip into a spin – with almost certainly disastrous results. The main rotor blades stalled during high-G manoeuvres at high speed and high alpha, causing the Mi-24 to pitch up uncontrollably and fall through sharply. This phenomenon, known as *pod*___khvaht___ ('pick-up'), often resulted in a hard landing on the wing endplates and FFAR pods. The 'pick-up' could be avoided by sticking to the flight manual (in other words, taking it nice and slow), but this was impracticable in a combat situation; pilots don't give a damn about manuals if they know a certain manoeuvre can save them from being shot down!

As a result of the 'pick-up' phenomenon or during recovery from a high-G dive the main rotor blades could strike the tailboom. One such incident was recorded in August 1980 when two *Hinds* flown by Sqn Ldr Maj. Kozovoy and his deputy Maj. Alatortsev came back from a sortie with holes torn in their tailbooms by blade strikes. This incident had a tragic sequel. Both choppers were repaired but in its post-repair checkout flight Kozovoy's Mi-24 was hit by a burst of 12.7-mm HMG fire which took off one of the tail rotor blades, causing violent vibration; the hastily repaired tailboom broke and the helicopter crashed, killing the crew.

Pulling out of a 20° dive at 250 km/h (155 mph), the Mi-24 could lose up to 200 m (660 ft) of altitude. During all-out manoeuvring at low level there was no room for error, and manoeuvre speed and co-ordination became all-important; there was a macabre joke among *Hind* crews that flying in this fashion was 'just as easy as walking a tightrope'. The 181st OVP stationed in Kunduz learned it the hard way, losing six Mi-24Ds in the first year of the war – mostly in accidents. Some of the helicopters collided with mountains due to fog or



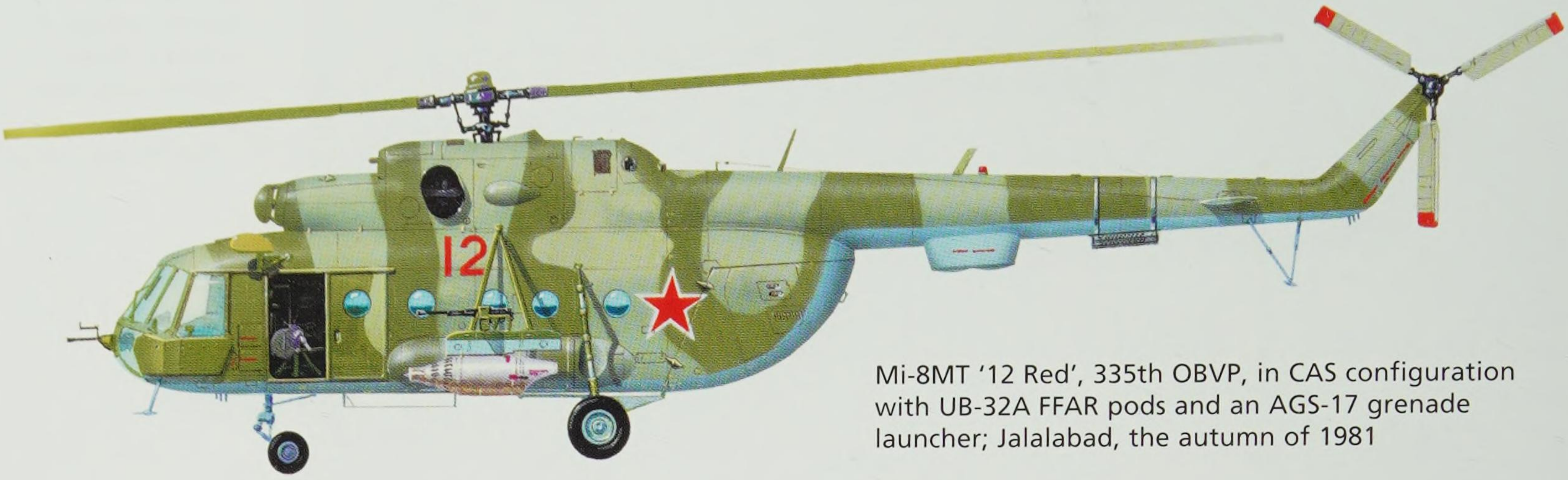
This 50th OSAP Mi-8MT was used for inserting reconnaissance groups and had the weapons pylons removed to save weight. Kabul, the spring of 1986

A 50th OSAP Mi-8MT at the 'Pilotka' (Fore-and-aft cap) outpost.

wind shear, others were written off in messed-up landings on slopes or in cramped landing zones.

In April 1980 Mil' Design Bureau General Designer Marat N. Tishchenko visited several Mi-24 units in Afghanistan and the 'aerial hooligans', as the daredevil pilots were wryly referred to by the army top brass, demonstrated some of the officially banned manoeuvres to him, taking the helicopter to its limits. After watching a session of 'aerobatics' featuring ultra-steep climbs, spectacular spins and even the allegedly impossible (for a *Hind*) barrel roll the amazed company boss

Probably the same scene from a different angle. Sometimes the landing pads were literally not big enough for the whole chopper!



Mi-8MT '12 Red', 335th OBVP, in CAS configuration with UB-32A FFAR pods and an AGS-17 grenade launcher; Jalalabad, the autumn of 1981

exclaimed, *'I thought I knew what my helicopters can do; now I'm not so sure!'*

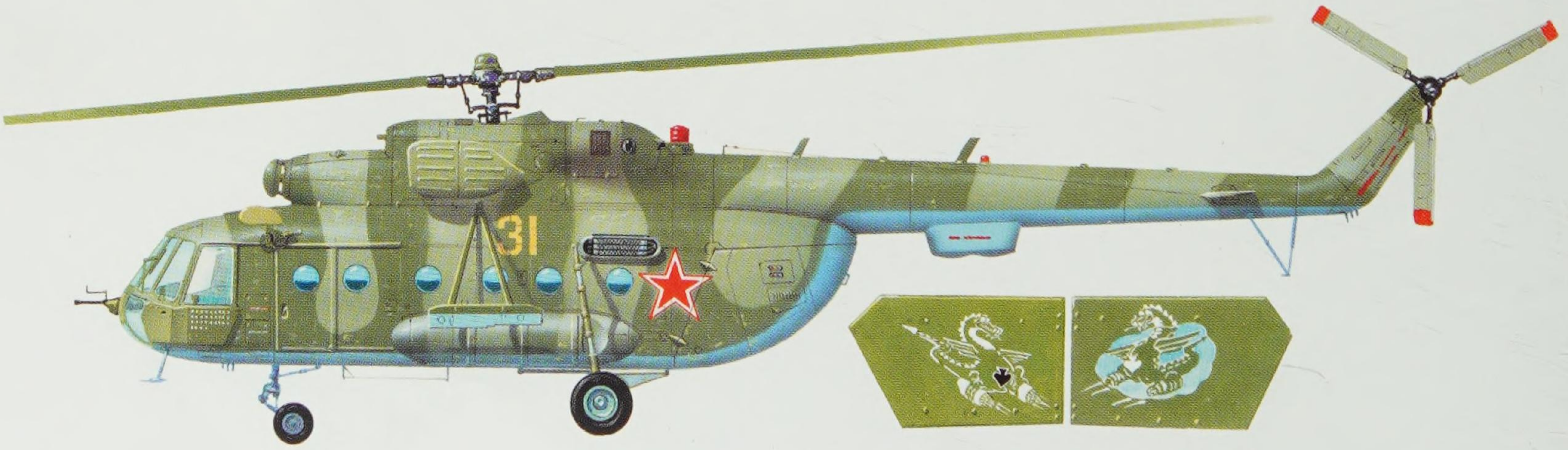
The daredevil demonstration created a lasting impression, and the positive effect came very soon: in the summer of 1980 the Mil' OKB began working on an upgrade package for the Mi-24. This included readjustment of the engines' automatic fuel controls to reduce power loss in hot-and-high conditions and a contingency increase in turbine temperature for the duration of the war; the crews preferred to risk having a turbine casing burn through than to suffer from lack of power when they needed it most.

The engine air intakes were fitted with vortex-type dust filters which extracted up to 75% of the dust and sand, reducing compressor blade wear 2.5 to 3 times. The Mi-24 actually got them ahead of the Mi-8 – even though the *Hip* operated from unprepared landing zones a lot more than the *Hind*. The reason was that the latter's TV3-117 turboshafts had a higher mass flow than the Mi-8's TV2-117As and thus ingested sand more readily, making the engine wear problem more acute. (These filters became standard on the 'second-generation' Mi-8MT *Hip-F* which was used a lot in the Afghan War as well.) Also, Mi-24 bases in Afghanistan always had the hardstands and runways/taxiways paved with PSP as a measure to keep the dust down.

The improved Mi-24V *Hind-E* began arriving in Afghanistan in 1981. It had TV3-117V engines giving 15-20% more power in hot-and-high conditions. Older Mi-24D *Hind-Ds* were retrofitted with the new engines during overhauls.

The scale of heliborne operations mounted steadily; by the end of 1980 the rotary-wing element of the 40th army had been doubled to 200 helicopters. The combat choppers made both planned sorties and on-call sorties as requested by the ground forces if a pocket of resistance was encountered. The Army Aviation accounted for 33% of the planned strike missions; by contrast, its share in real CAS was a whopping 75%. By then there were three levels of ground force operations – army ops, unit ops and the so-called implementation (performed at division, brigade and battalion level respectively). Each type invariably involved helicopter support, and the *Hind* with its comprehensive weapons range was used as the proverbial armoured fist.

Mi-8MT '31 Yellow' from the 262nd OVE at Bagram wore 'Dragon of Spades' nose art on the external cockpit armour in December 1988.

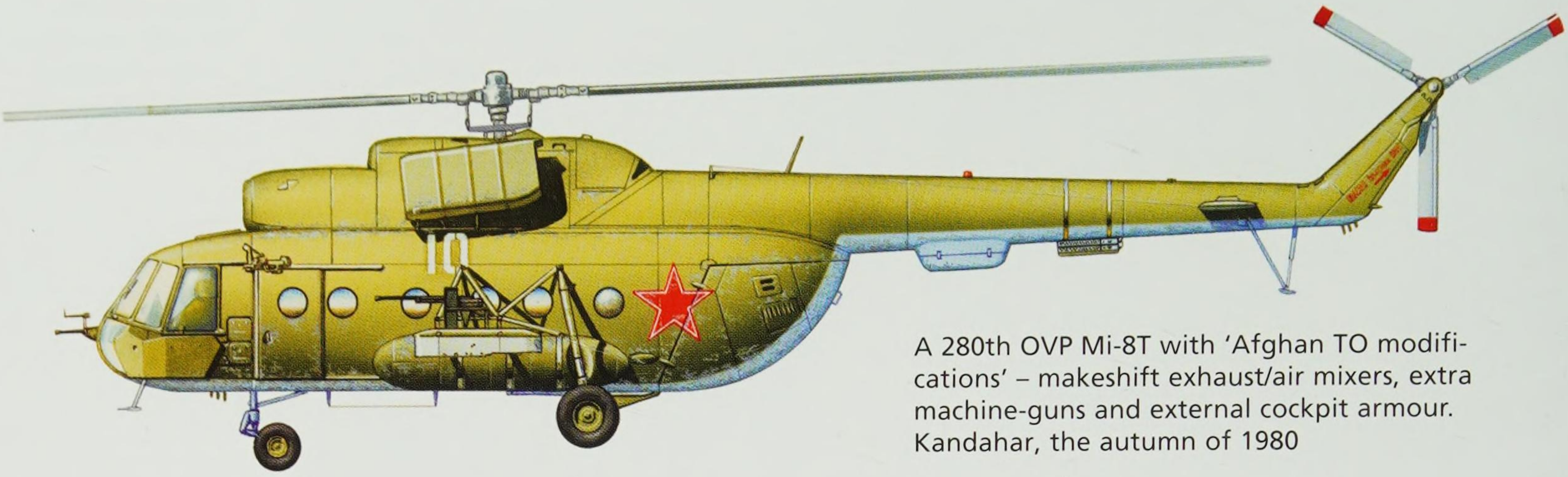


A commando group boards a Mi-8MT equipped with exhaust/air mixers, the summer of 1987.

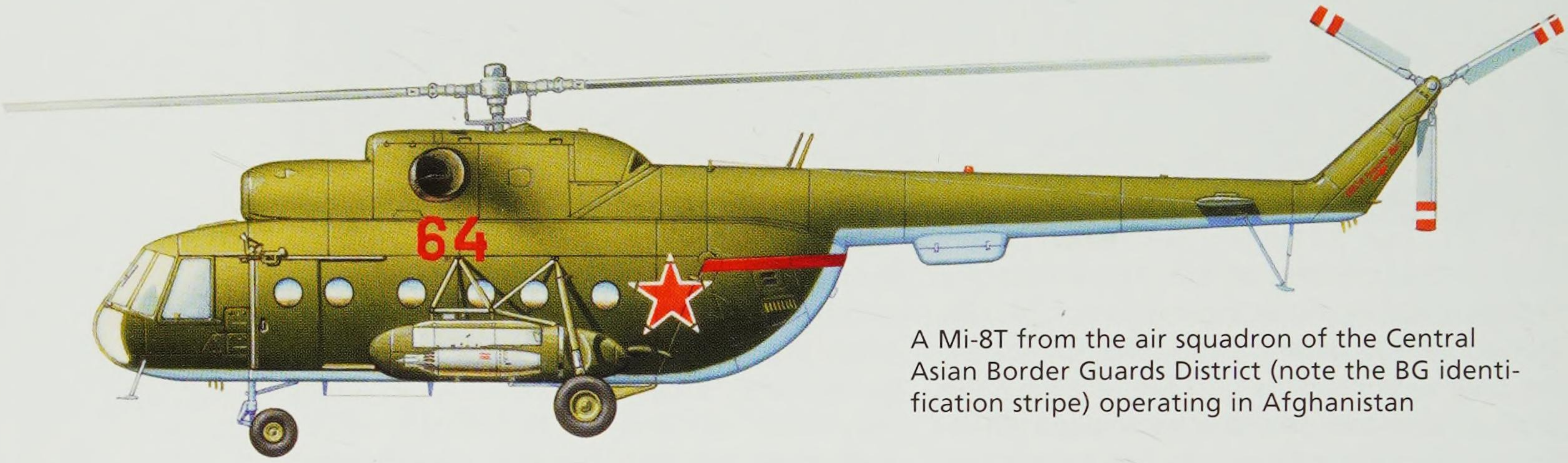
If a mix of bombs and rocket pods was carried the pilot would let loose a salvo of FFARs at 1,200-1,500 m range and then hose down the area with machine-gun fire, allowing the WSO to aim and drop the bombs accurately. For such pinpoint strikes, which were made at high speed and low altitude, the bomb detonators were set with a delay of up to 32 seconds (the same as on attack aircraft) to avoid being hit by fragments of one's own bombs. This didn't always work: in the summer of 1985 a Mi-24 operating out of Ghazni in central Afghanistan came home with 18 fragments of its flight leader's bombs in its fuselage. Fully loaded, the *Hind* could take up to ten 100-kg (220-lb) bombs on MBD2-67U racks. In a simultaneous drop, accuracy was rather low, but this technique worked well against area targets such as Mujahideen camps.

Bomb-toting Mi-24s often spearheaded assault groups, demolishing the thick adobe walls of Afghan huts which became death traps for Mujahideen gunners. Another favourite weapon for these missions was the UPK-23-250 gun pod; the GSh-23L cannon had a high muzzle velocity and proved far more effective against such structures than S-5 FFARs – the shells pierced the walls, exploding inside.

The Mi-8 would lug all kinds of loads, down to firewood and potable water, as seen here (Jalalabad, 1988).



A 280th OVP Mi-8T with 'Afghan TO modifications' – makeshift exhaust/air mixers, extra machine-guns and external cockpit armour. Kandahar, the autumn of 1980



A Mi-8T from the air squadron of the Central Asian Border Guards District (note the BG identification stripe) operating in Afghanistan

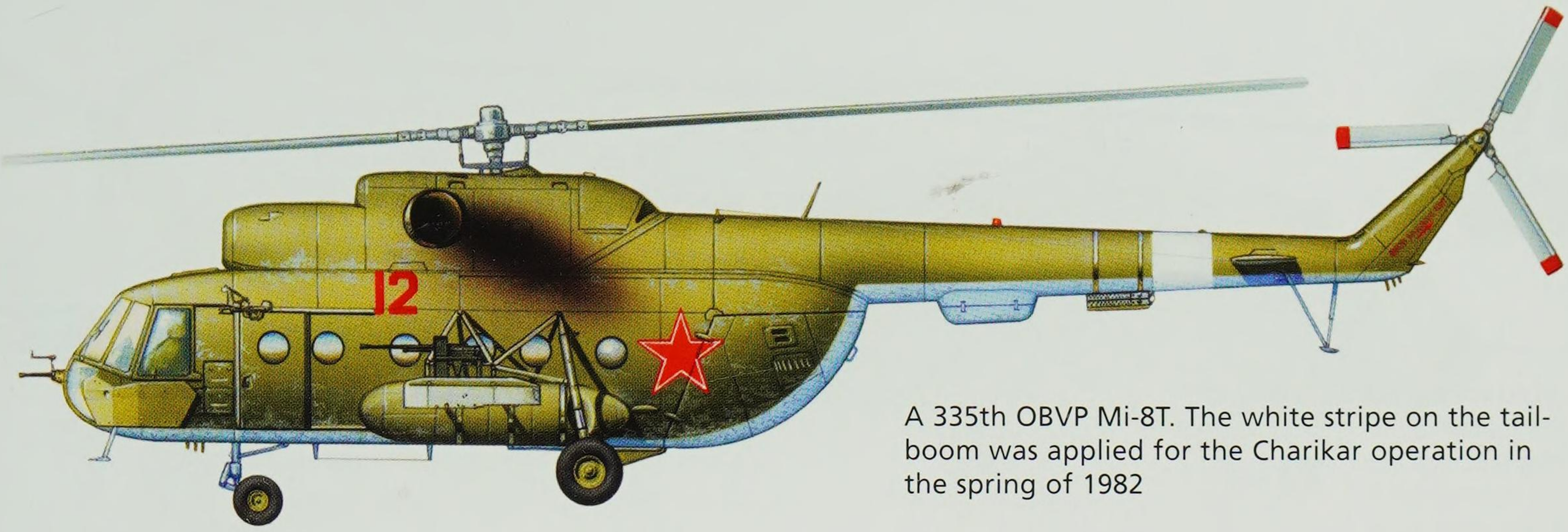
The Mi-24 could also carry large-calibre HE bombs – four FAB-250s or two FAB-500s. These were used against ancient fortresses which were plentiful in Afghanistan and made convenient bases for the rebels; they were strategically located on insurmountable cliffs, protecting settlements and road junctions, and had stone or adobe walls 3 m (10 ft) thick which were impervious to S-5s.

In June 1980 eight Mi-24Ds toting big bombs played a vital role in the capture of Mt. Sanghi-Douzdan – the famous 'Mountain of Thieves' near Faïzabad which Alexander the Great had failed to capture in his time. The mountain was riddled with caves and passages like a rotten log and had sheltered local bandits from time immemorial, hence the name; now it was a major Mujahideen base. Truck-mounted BM-21 Grad (*Hail*) multiple-launcher rocket systems pounded the mountain without respite, paving the way for the ground troops. The *Hinds* joined in at night, flying sortie after sortie; no weapons system operator was carried to enable the chopper to take more bombs which every available man joined in hauling up and hooking up.

August 1980 was probably the first time when Mi-24Ds used FAE bombs against a Mujahideen ambush in the Faïzabad canyon. Knowing about the lower-than-average reliability of these munitions, the pilots of two *Hinds* covering the lead pair immediately fired a salvo of rockets into the resulting cloud of fuel mist for good measure. The bombs had been dropped at 300 m (980 ft), which was higher than usual, yet the blast wave caught up with the choppers and the jolt was quite bad; as the pilots themselves put it, 'the first thing we knew was our teeth snapping'!

Besides signal flares and tracer bullets, the ground forces would use artillery pieces or tank guns to indicate the target for incoming choppers (though the Mujahideen also used signal flares and tracer bullets to deceive the helicopter crews!). Often the pilots assisted FACs by firing a single FFAR in the approximate direction of the target which the FAC would use to accurately determine the target's location. Theoretically, the minimum safe distance from friendly troops during CAS operations was set at 1,500 m (4,920 ft) for bombs, 500 m (1,640 ft) for rockets and 300 m (980 ft) for machine-gun fire. In reality, however, the helicopters often had to take out targets no more than a few dozen yards from friendly troops when the enemy got real close.

When preparing for a planned mission the crews used topographic maps and intelligence photographs to study the mission area. Local navigation using map co-ordinates proved



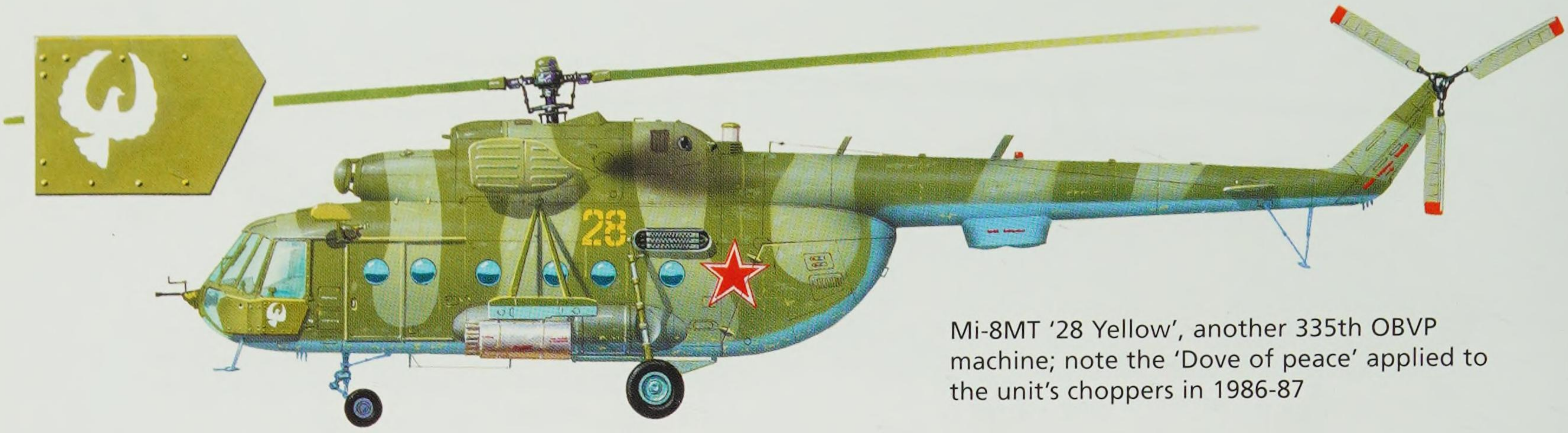
A 335th OBVP Mi-8T. The white stripe on the tail-boom was applied for the Charikar operation in the spring of 1982

inconvenient and inaccurate; instead, the crews used the so-called *oolitka* (snail) – a 1:100,000 scale map on which squares measuring approximately 600 x 600 m (1,970 x 1,970 ft) were marked and numbered in a spiral sequence resembling a snail's shell. After entering the required square of the map the pilot located known landmarks and used them to pinpoint the target. In some areas where the helicopters were constantly in action the pilots often made do with a mere scrap of map depicting the operational area in a map-case strapped to the thigh.

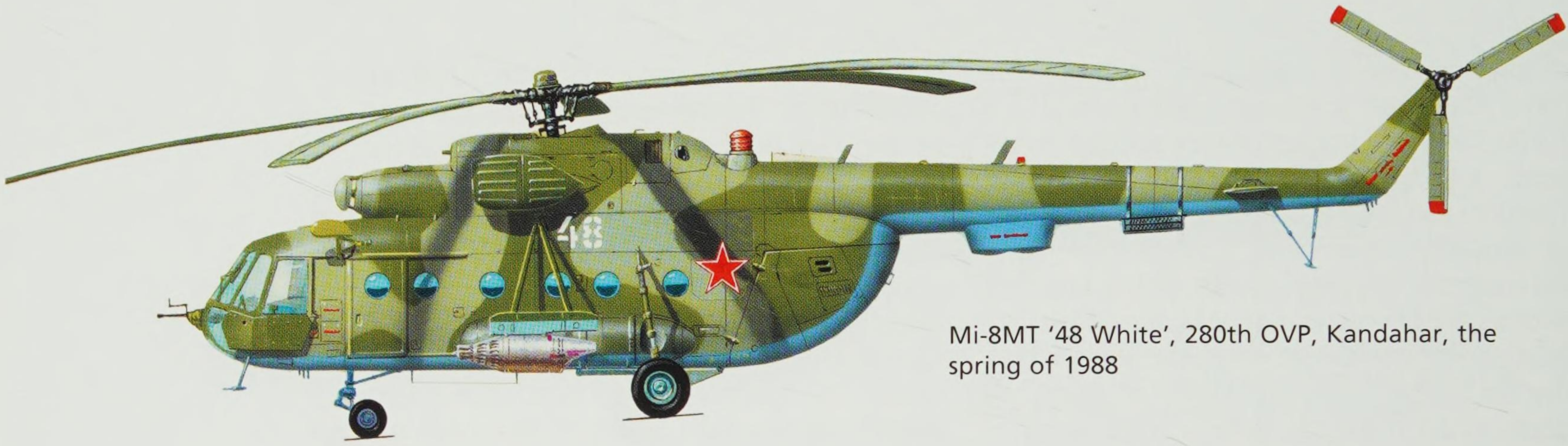
In March 1982 a squadron of *Hinds* was tasked with eliminating a gathering of Mujahideen leaders in Asadabad. The operation was organised par excellence; a flight of Mi-24s kept the air defences busy while another secured the perimeter of the city block to stop anyone from getting in or out. The Afghan spotter identified the correct building and the entire squadron came in, obliterating it. However, the 'ally' fled as soon as the helicopters landed, and with good reason, too. The house he had indicated belonged to a local big shot and a long-time bitter enemy of his; the man simply saw the opportunity to take his revenge. Another tragicomical incident which happened in Kandahar was a classic case of miscommunication. The spotter pointed to a house below which was promptly attacked; it turned out that the poor devil, who spoke no Russian at all, had merely wanted to show his own home…

Bombing and shooting accuracy was affected by orographic turbulence and winds which could cause the bombs and rockets to drift way off course. Mi-24V pilots had been taught by experience to rely more on the Mk 1 eyeball and good judgement than on the ASP-17V gunsight and the VSB-24 ballistic

Soviet commandos festooned with clips for Kalashnikov assault rifles wait to board Mi-8MT '50 Red' before a mission.



Mi-8MT '28 Yellow', another 335th OBVP machine; note the 'Dove of peace' applied to the unit's choppers in 1986-87

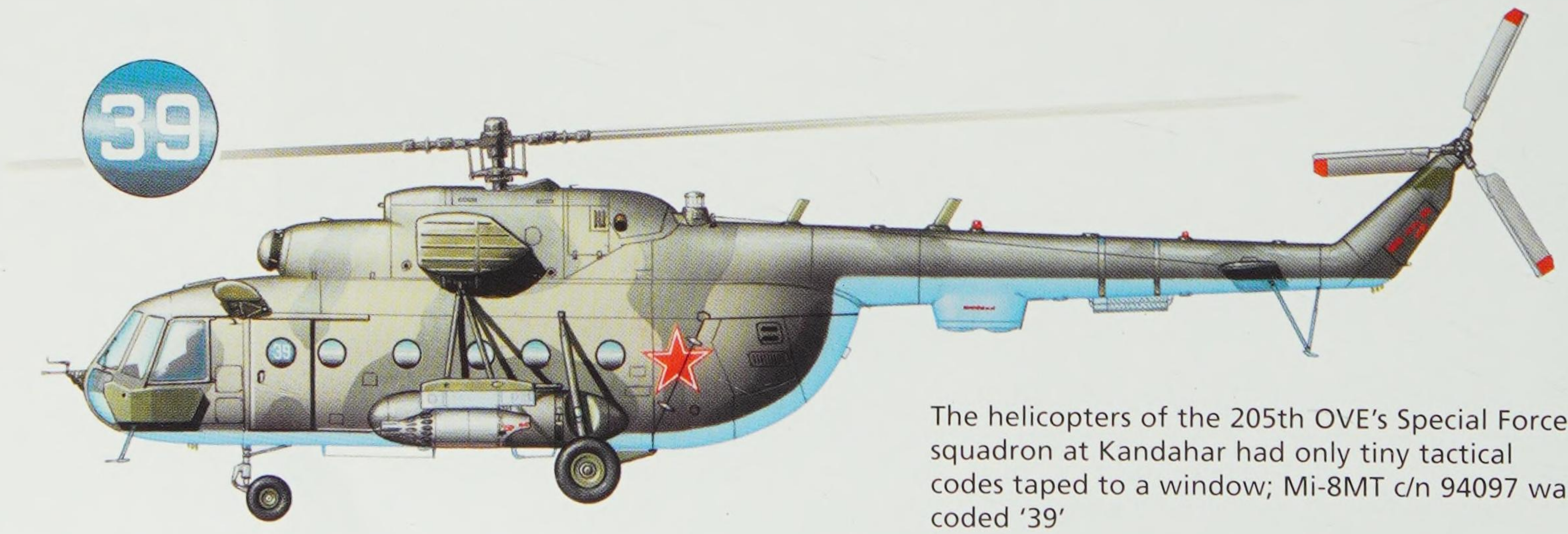


Mi-8MT '48 White', 280th OVP, Kandahar, the spring of 1988

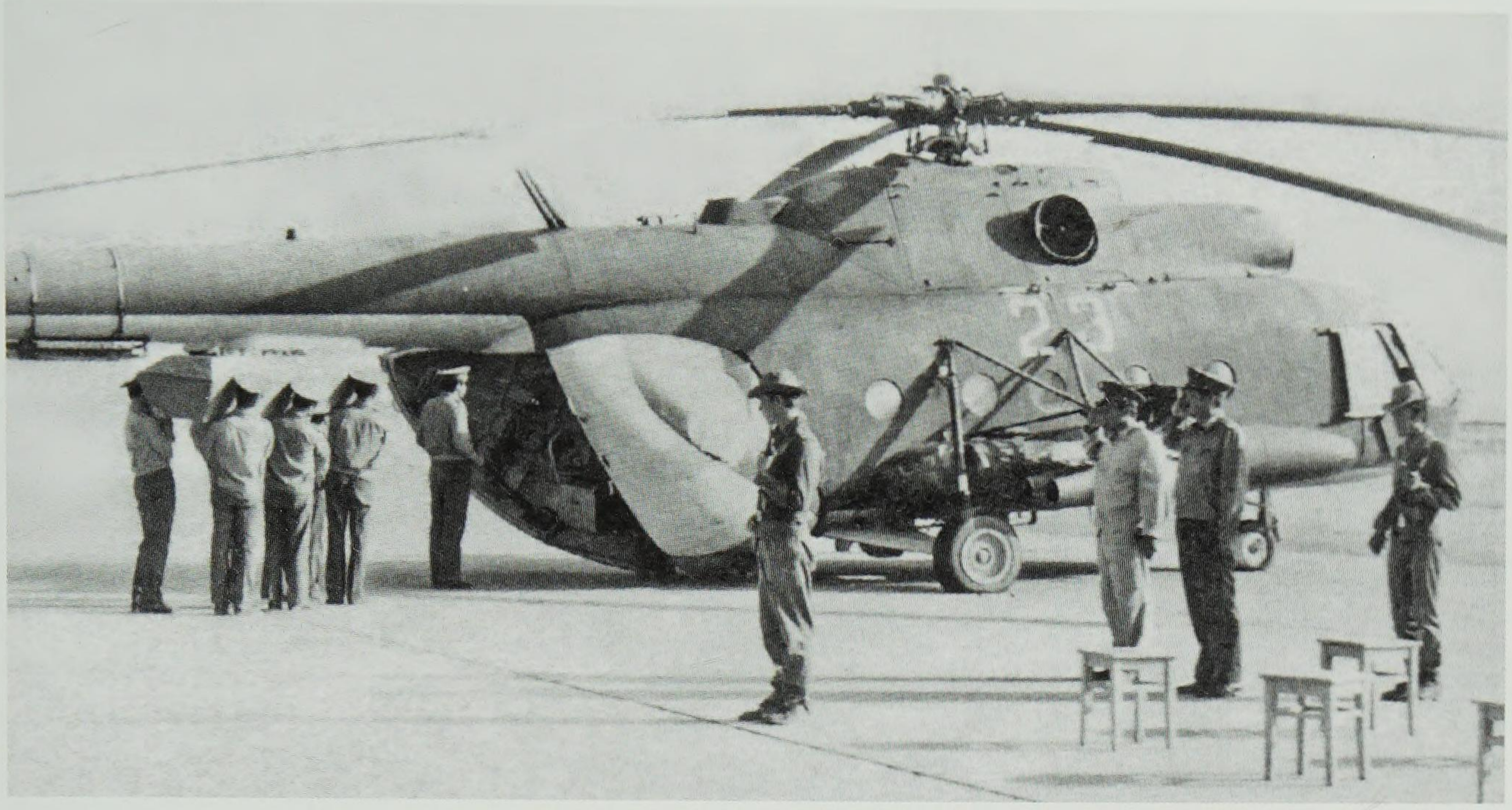
computer; as Sniper Pilot Nikolay Malyshev put it: *'It's all about hitting the target, not about taking aim!'* WSO Ivan Manenok operating out of Jalalabad became something of a local legend; he was a 'seat of the pants' airman unequalled in his ability to lob bombs squarely on top of Mujahideen fortresses and machine-gun emplacements. During operations against villages he could place HE bombs at right angles precisely at the base of a wall, achieving maximum effect.

In an attempt to hide from Soviet air raids the Mujahideen began setting up shelters and AAA positions behind rocky outcrops. Still, the *Hinds* would get them there, using the lob-bombing technique. The same method was used against targets heavily protected by AA artillery.

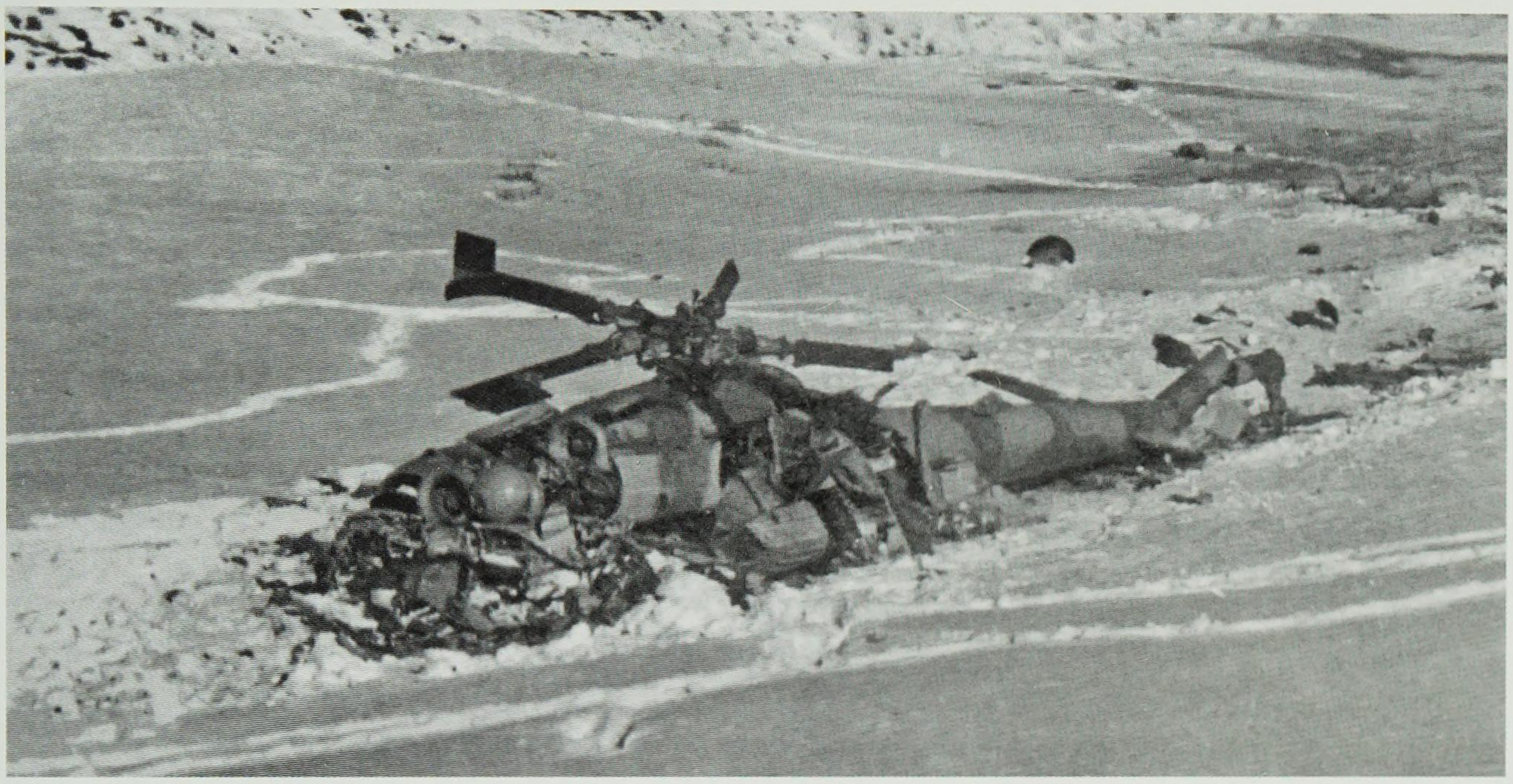
Some Mi-24s carried S-24 heavy unguided rockets which could be launched at a range of up to 2 km (1.24 miles) without taking the helicopter within range of enemy air defences. A *Hind* unit commanded by Col. Gorshkov made 50 successful launches. Still, the S-24 could only be used successfully by experienced crews and thus did not find wide use. The reason was that the heavy rocket produced a heavy smoke trail which enveloped the helicopter completely, creating considerable risk of engine surge.



The helicopters of the 205th OVE's Special Forces squadron at Kandahar had only tiny tactical codes taped to a window; Mi-8MT c/n 94097 was coded '39'

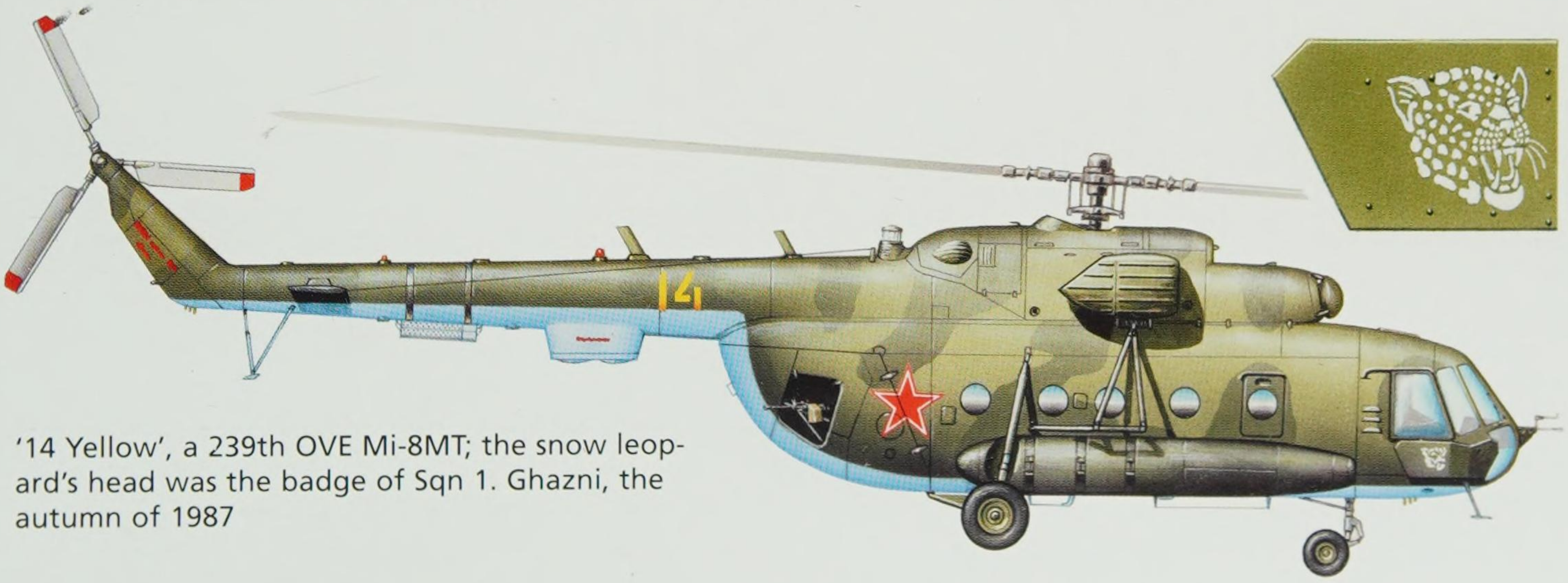


The crew of Maj. N. V. Babenko was shot down and killed near Kandahar on 13th June 1982. Here, the bodies are loaded into a Mi-8T for burial in the USSR.



This 50th OSAP Mi-8 captained by Maj. Aleksandr G. Piskaikin was shot down on 21st January 1988 en route from Kabul to Gardez, killing most of the crew.

9M114 Shtoorm-V anti-tank guided missiles were used successfully not only against vehicles (the Mujahideen had few tanks) but also against bunkers and gun emplacements if these were known in advance. At 1.5-2 km (0.93-1.24 miles) range, a WSO with good aim could place a 35-kg (77-lb) missile squarely in an embrasure or the mouth of a cave. The Shtoorm-V was especially effective for this if equipped with a FAE warhead which blew the



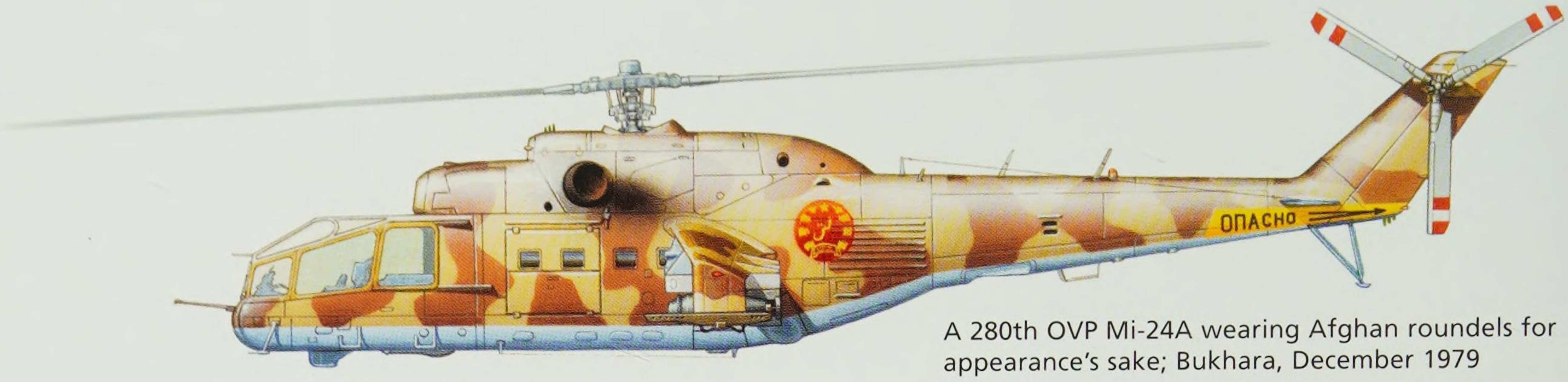
'14 Yellow', a 239th OVE Mi-8MT; the snow leopard's head was the badge of Sqn 1. Ghazni, the autumn of 1987

Left and opposite page: Soviet Mi-24Vs over the Hindu Kush mountains

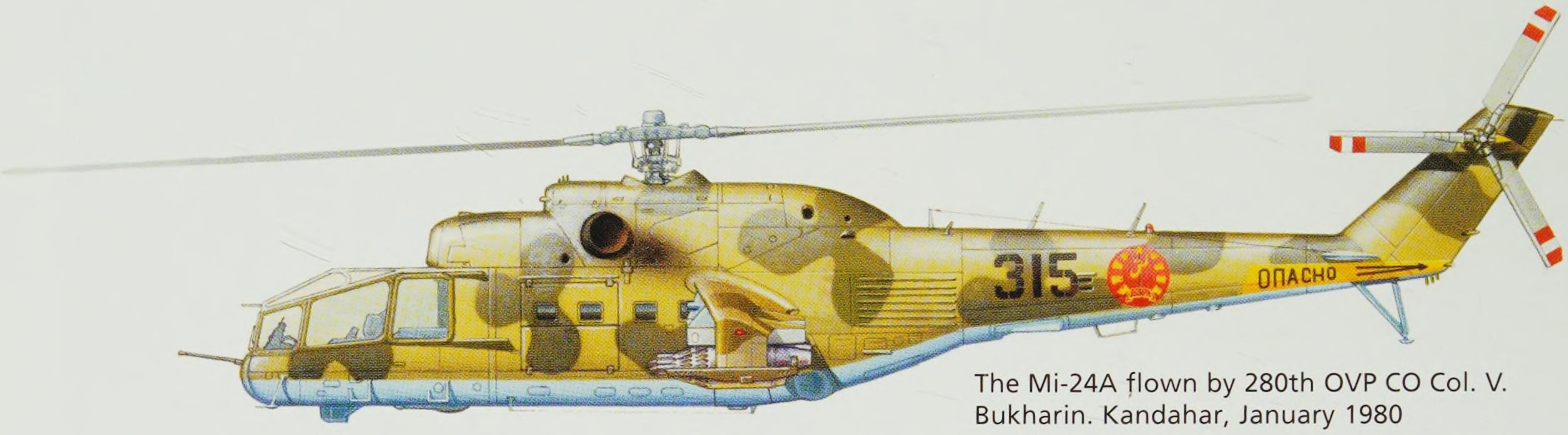
bunkers apart from within. When fired at Mujahideen vehicle convoys the Shtoorm-V had a kill rate of 75-80%; pilots even complained there were 'too few suitable targets' for these weapons!

At close range (800-1,000 m/0.49-0.62 miles) the YakB-12,7 machine gun was brought into play. Its quadruple barrels belched a devastating stream of fire which could rip through adobe walls 50 cm (20 in)

Mi-8MTs and Mi-24Vs at one of the Soviet bases in Afghanistan.



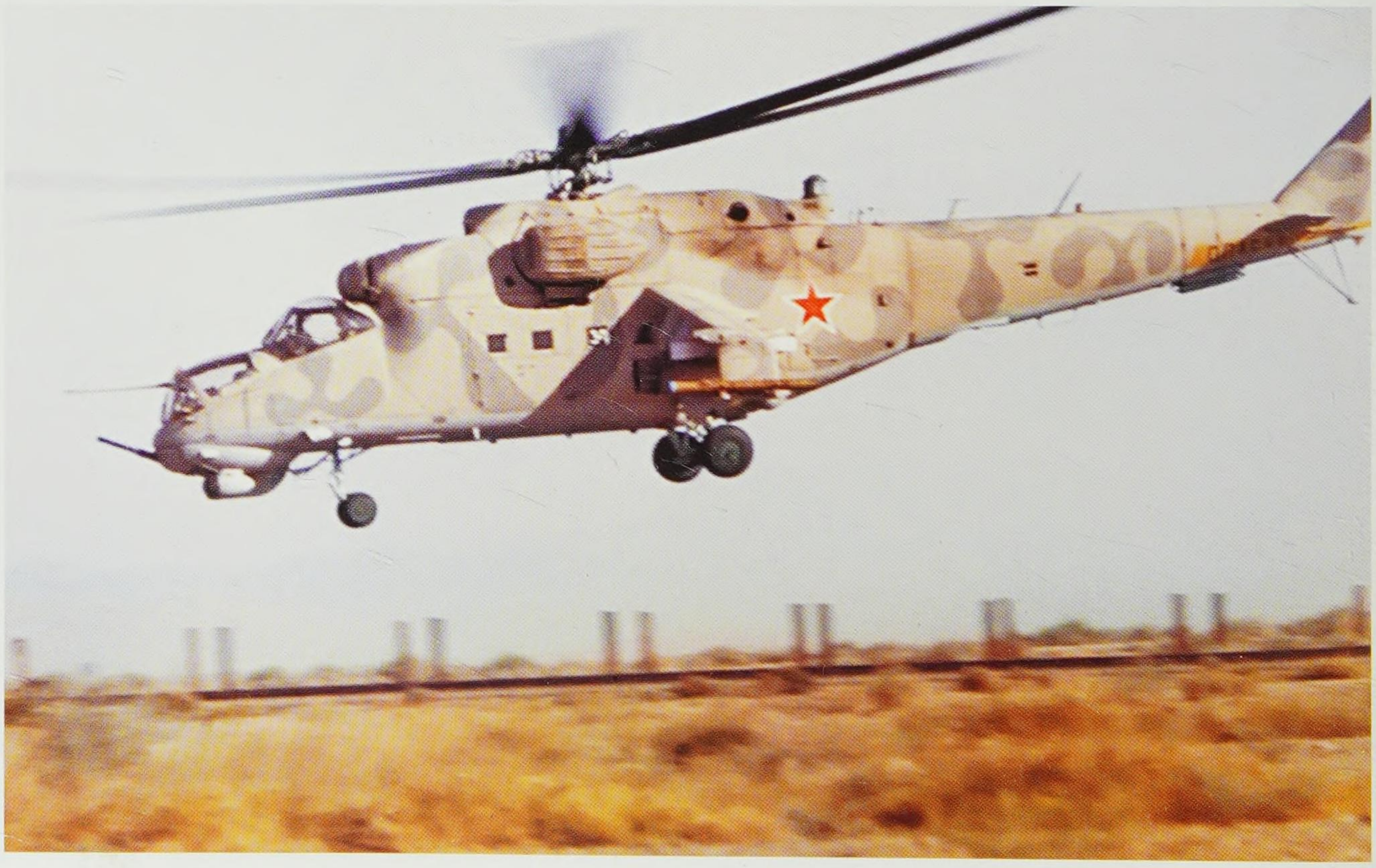
A 280th OVP Mi-24A wearing Afghan roundels for appearance's sake; Bukhara, December 1979



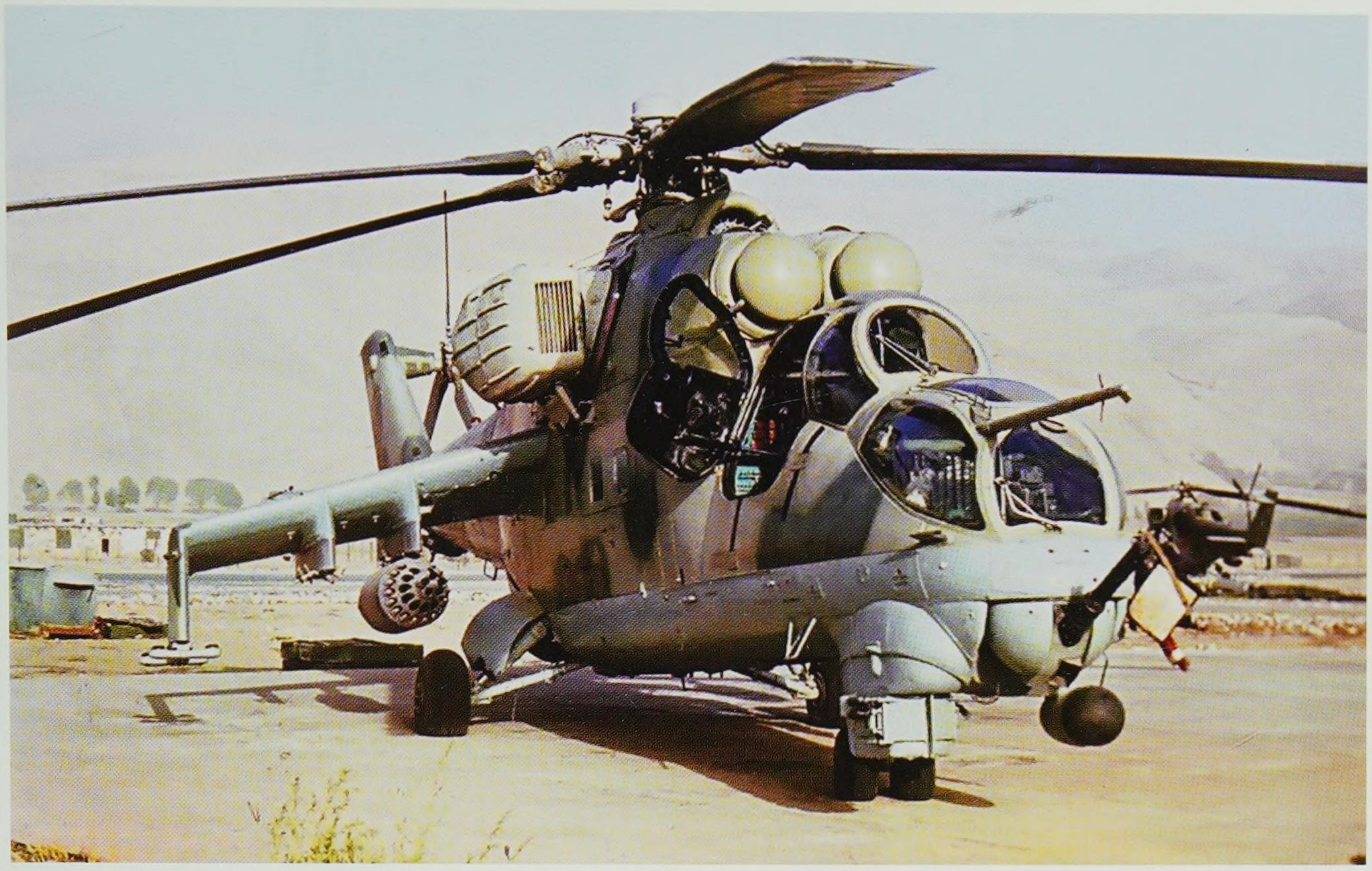
The Mi-24A flown by 280th OVP CO Col. V. Bukharin. Kandahar, January 1980

thick. In August 1982 a Mi-24V strafed an enemy convoy near Kandahar, literally cutting the lead vehicle in two with a single burst of machine-gun fire. However, the YakB-12,7 had its weaknesses. The revolving barrel block and electrically-actuated barbette were a bit too complex; the whole installation was prone to overheating and sensitive to dust and dirt. Crews were lucky to fire 500 rounds before the weapon jammed. The manufacturer's recommendation to fire in short bursts was impracticable, as crews often got carried away in the heat of the battle.

The 'flying IFV' concept did not prove feasible in combat; crews were reluctant to fly a 'battlebus' full of 'passengers', as the Mi-24 was decidedly overweight and sluggish with a full payload. Hence the armour plating and troop seats in the cabin were often removed to save weight. For the same reason the pay-



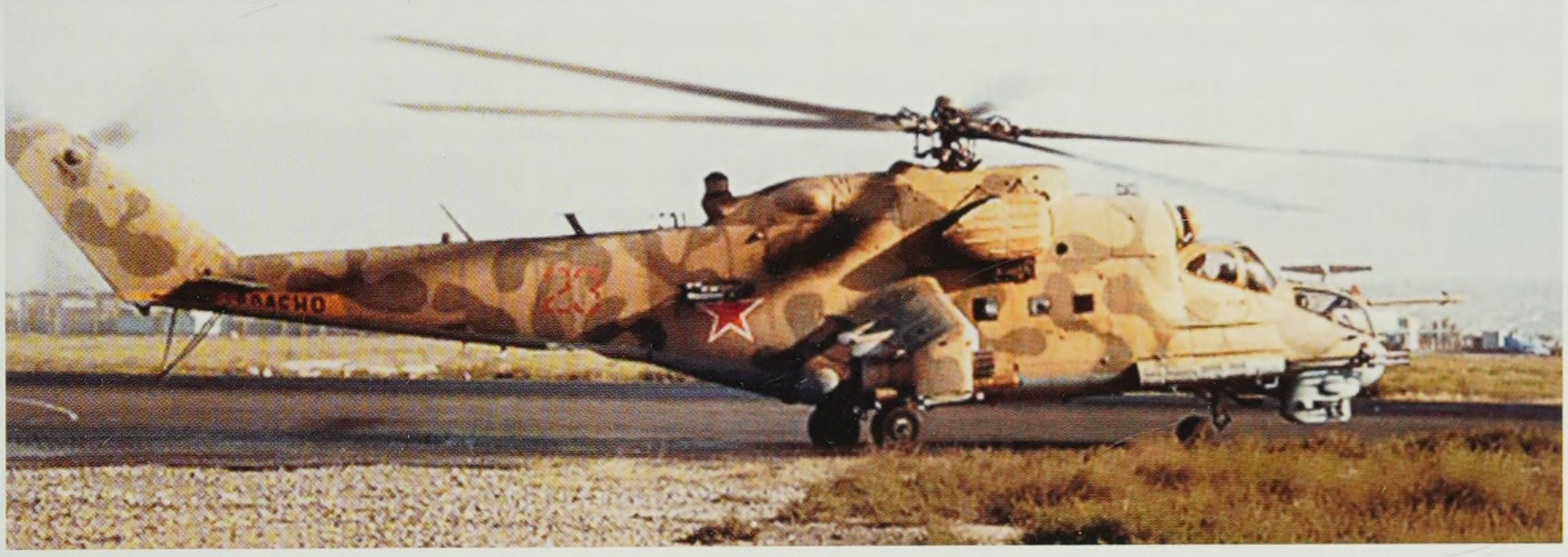
This 205th OVP Mi-24V carried the tactical code '37 White' only in the cabin window. It was shot down on 16th February 1988.



A Mi-24V with exhaust/air mixers and UB-32A FFAR pods awaits the next mission.

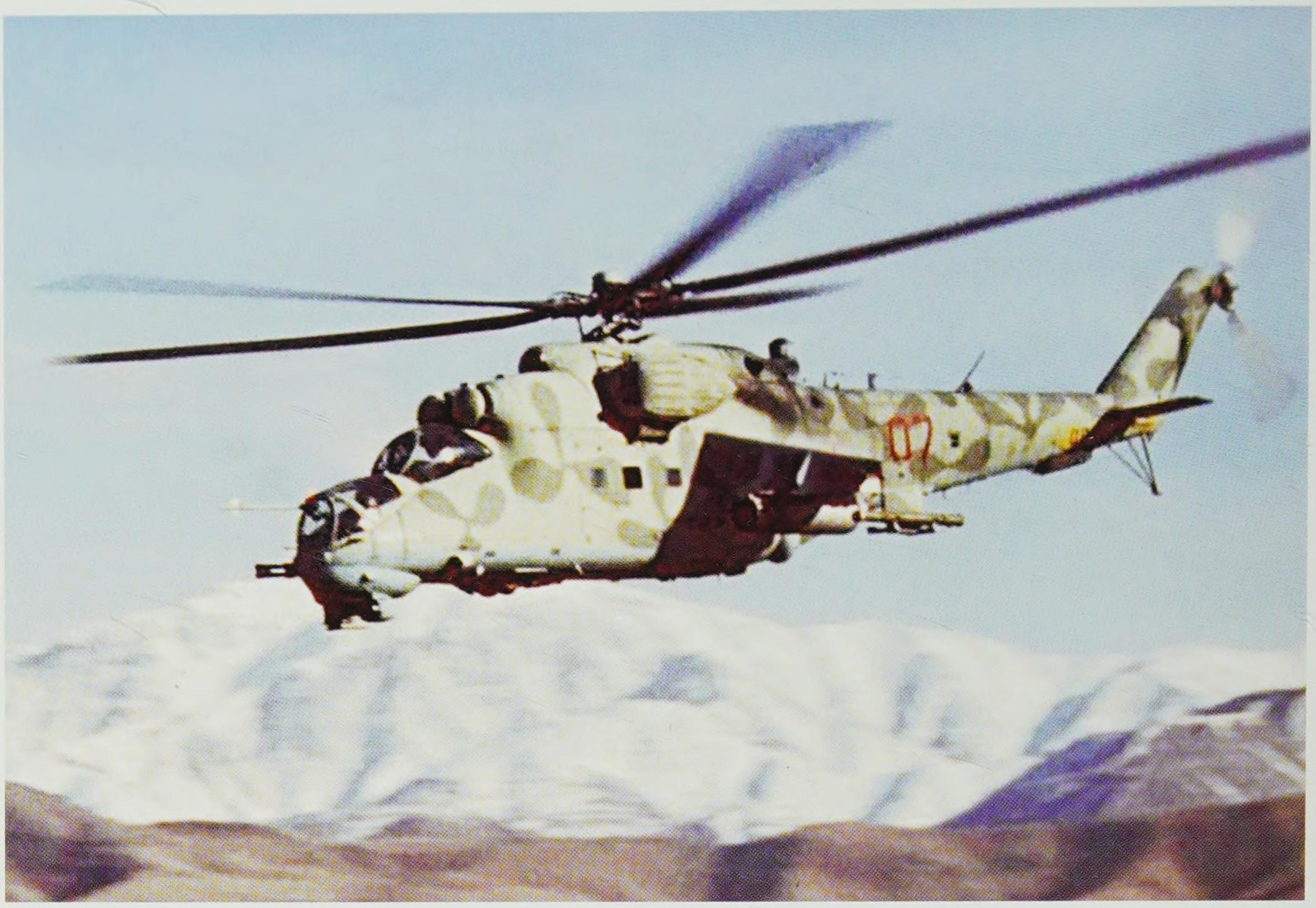
load was often limited to two FFAR pods or bombs (this was enough for most missions) and the fuel tanks were rarely filled more than two thirds. Only 16% of the sorties were flown fully loaded, and then on short distances only.

Mi-24s were often used to patrol areas of interest and destroy targets of opportunity. The missions, known officially as 'reconnaissance/strike operations' (armed reconnaissance), were usually flown by pairs or flights of four. The normal weapons fit for such opera-



Mi-24P '23 Red' carrying B-8V20 FFAR pods taxies out for take-off.

Two more *Hind-Fs* taxi at Kabul airport; one of their missions was to provide cover for arriving or departing transports.

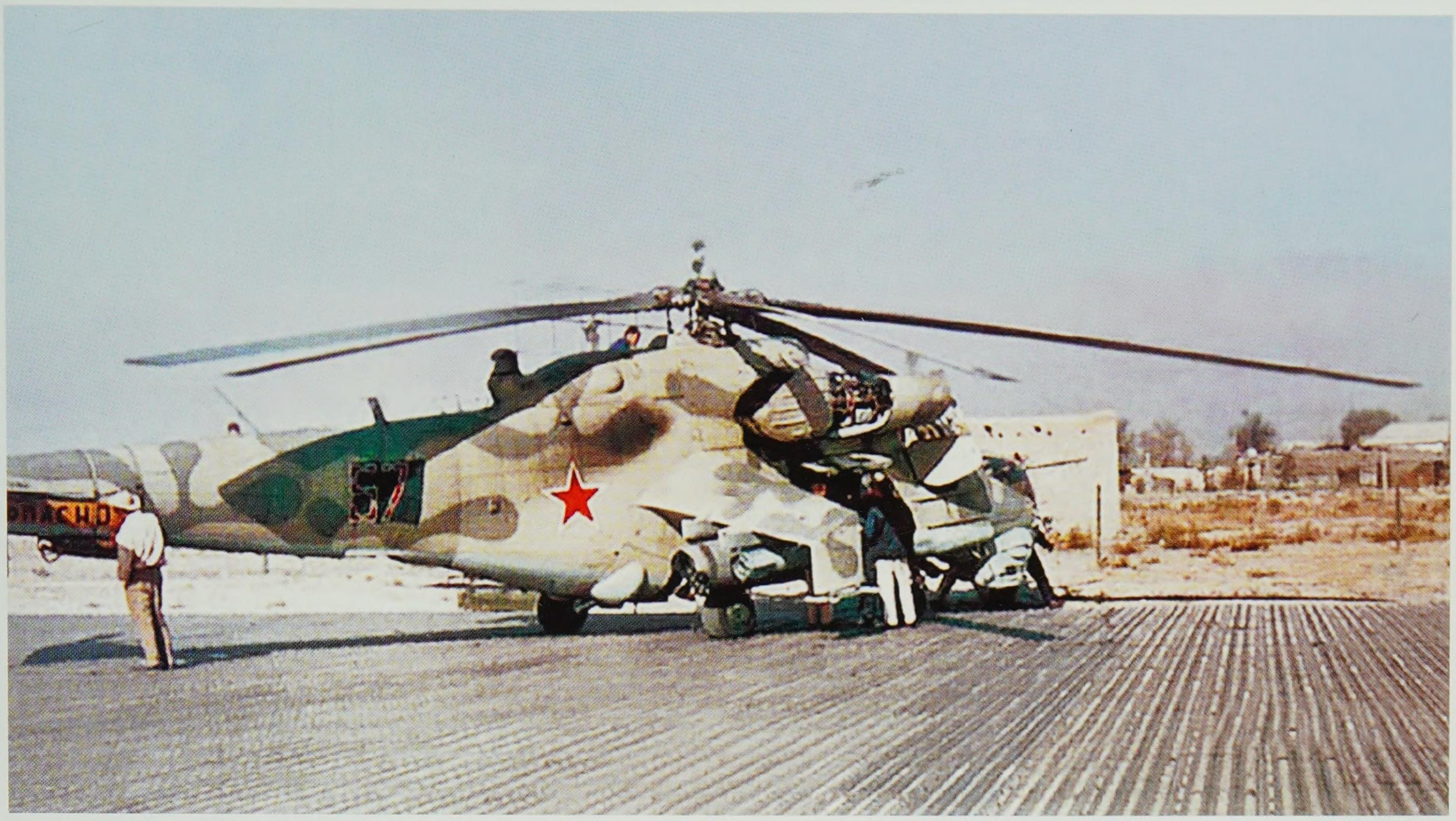


Mi-24P '07 Red' armed with two FFAR pods and two ATGMs flies over the Hindu Kush.

tions was two FFAR pods, two ATGMs and 500-700 machine-gun rounds. The 'softer-skinned' and less heavily armed Mi-8TV *Hip-C/Es* and Mi-8MTV *Hip-Hs* were rarely used alone for these dangerous missions but could provide welcome support for the 'crocodiles'.

The helicopters assumed echelon formation angled at 15-20° with a separation of 600-800 m (1,970-2,620 ft) and patrolled the area at an altitude of 1,500-1,700 m (4,920-5,570 ft); all the crews enjoyed good visibility and freedom of manoeuvre. Having located a convoy, the choppers would fire warning shots across its path, forcing it to stop and keeping it in check until the inspection group arrived in several Mi-8s. However, increasingly more often the convoys included 'trapmobiles' with HMGs hidden under tarpaulins, so before long the hunters began simply shooting up suspicious convoys, leaving the inspection group little to do except collect the booty and burn what lorries were left (if any).

As a Russian song goes, 'Maybe in this photo we're together for the last time...' Such collective photos taken unofficially were fairly common during the Afghan War.

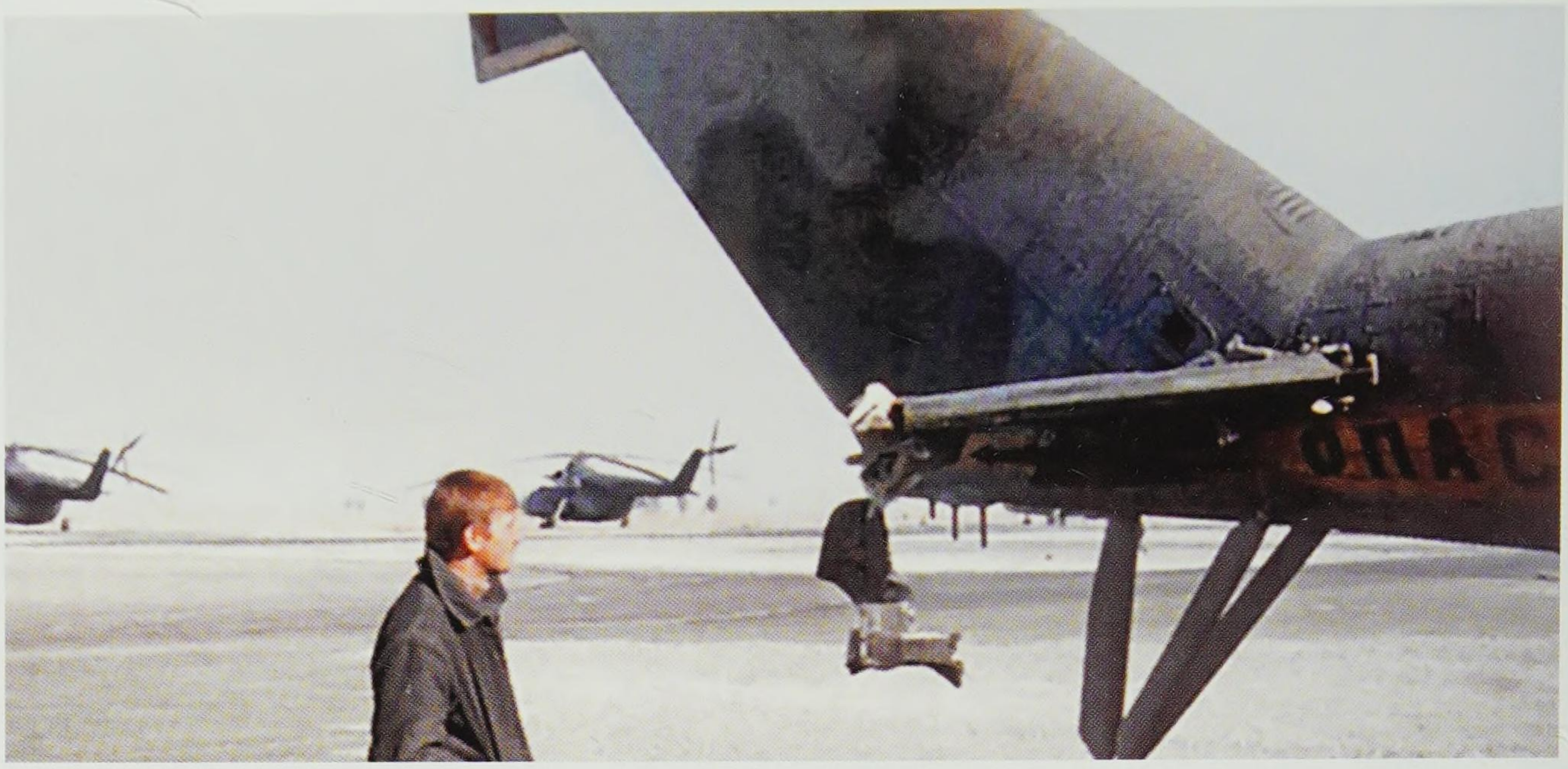


Mi-24P '57 Red' is serviced on a PSP-covered hardstand. Oddly, the GSh-2-30 cannon is missing (possibly removed for repairs).

At night, when the enemy moved about more freely, the 'hunters' patrolled roads and mountain paths in pairs, maintaining a vertical separation of 80-100 m (260-330 ft) for safety's sake. Having located vehicle headlights or camp fires and received confirmation there were no friendlies in the area, the group attacked immediately; quick reaction was crucial to prevent the Mujahideen from vanishing into the night. Usually all lights on the ground were promptly extinguished when the choppers put in an appearance. However, the *Hinds* fired special S-5-O (*osve**tit**el'nyy*) illumination FFARs to 'pin down' the target, then dropped flare bombs and dived to the attack. This tactic was later refined: the choppers attacked from above the flare bombs, staying invisible to the enemy.

'Night hunter' operations took a lot of training, but when you had that, they were extremely effective. On one occasion in April 1986, a Soviet tactical reconnaissance group

Aircrew and troopers wearing bulletproof vests and load-bearing vests pose with a Mi-24D or V which, unusually, lacks intake filters.



A technician examines battle damage to the horizontal tail of a Mi-24.

reported a suspicious convoy approaching Gharkalay village near Kandahar and a flight of *Hinds* took off to intercept. A single firing pass sent the Mujahideen scattering like roaches, abandoning six truckloads of weapons. In December 1986 the Mi-24 tested 'blinding bombs' near Bagram. These munitions were modified flare bombs which produced a tremendous flash, putting enemy personnel within a radius of 30-50 m (100-164 ft) out of action for several hours but not causing permanent blindness.

One of the rotary-wing element's main roles in the war was vertical envelopment, that is, insertion of troops in the vicinity of villages, roads and other points held by the rebels. In these operations the Mi-24 acted as a steamroller, crushing enemy resistance with bombs and rockets to clear the way for incoming transport helicopters. One or two pairs of *Hinds* escorted the transport choppers (as many as 60 at a time) all the way to the LZ, flying along the flanks and 200-400 m (660-1,310 ft) higher. The landing was preceded by artillery fire and strikes by attack aircraft followed hot on their heels by one or two flights of Mi-24s. Before the enemy had time to collect his wits the heliborne assault was coming in, covered by several pairs of helicopters which circled over the LZ at 1,200-1,800 m (3,940-5,900 ft), taking out any surviving enemy gunners. Another flight of Mi-24s stayed at the base on ready alert, replacing the ones which had expended their ammunition if required.

Small-scale vertical envelopment operations were covered by at least a flight of Mi-24s; one pair suppressed Mujahideen air defences while the other flew top cover. In November 1981 a group of helicopters leaving an LZ near Asadabad was fired upon by a gunner who had stayed low, waiting for a chance to engage the choppers. The tail-end *Hind* immediately made a U-turn and let loose a salvo of S-5S flechette rockets (the S suffix stands for ***strel****ka* – in this case, flechette) which made mincemeat of the gunner. Landing to collect the machine gun as war booty, the crew got a rare opportunity to see the results of their work 'up close and personal'.

The fearsome 'crocodile' was treated with due respect by the enemy. A curious incident took place near Tolukan in May 1983. Having run out of ammunition, Maj. Anatoliy Volkov continued to make mock attacks on a group of Mujahideen, scaring them off with the sight and sound of the roaring, sinister-looking helicopter diving straight at them, and saved the lives of a company of Soviet troopers getting out of the bush. (Afghanistan isn't all mountains and deserts: some parts of the country are, so to say, the next worst thing to the jungle of Vietnam.) Small wonder that the Mujahideen called the Mi-24 *shaitan-arba*, 'devil's chariot'.

Starting in the summer of 1980, the *Hinds* were tasked with another important mission – escorting Soviet vehicle convoys; this accounted for 15-17% of the sorties. The 40th Amy's daily needs amounted to hundreds of tons of fuel, ammunition, food and so on and the convoys delivering them were perpetually ambushed by the rebels. To provide protection the lorries were escorted by tanks, BMP-1/BMP-2 infantry fighting vehicles (*boye****va****ya ma****shin****a pe****kho****ty* – IFV) and/or BTR-70/BTR-80 armoured personnel carriers (***bro****netranspor****tyor*** – APC). Some lorries mounted ZU-23-2 twin-barrel 23-mm anti-aircraft cannons (*ze****nit****naya oosta****nov****ka* – AAA installation) which could fire almost vertically at Mujahideen positions on overhanging cliffs, and numerous guard points were set up along the roads.

Air cover, however, proved far more effective. Several pairs of Mi-24s would take turns patrolling above the convoy, zigzagging at 150-170 km/h (93-105 mph). The crews checked the surroundings 2-3 km (1.24-1.86 miles) to each side of the road – this was the rebels' usual attack range – and 5-8 km (3-5 miles) ahead of the convoy. Having detected a Mujahideen ambush, the choppers made a flank attack if possible, coming in along the road to avoid 'friendly fire' incidents. *Ad hoc* helipads were constructed along the roads for refuelling and 'changing of the guard', as providing constant escort to convoys crawling along at 15-20 km/h (9-12 mph) would otherwise have been impossible. For example, the first stretch from Termez on the Soviet side of the border to the infamous Salang Pass was protected by Mi-24s from Kunduz, using helipads in Khairaton, Mazar-e-Sharif, Tashkurgan and Pul-e-Khumri. At the Salang Pass, the *Hinds* from Bagram took over, later passing the convoys on to crews from Jalalabad, Ghazni and other bases.

The S-8 rockets earned the highest praise in Afghanistan. The 3.6-kg (7.93-lb) warhead had considerable demolition effect and produced lots of 3-gram (0.1-oz) fragments with

A Mi-24V receives a check prior to a mission. Note the open starboard cabin door.

The Mi-24's tan/brown camouflage was well suited to the conditions of Afghanistan.

An APA-5D is used to crank up the auxiliary power unit of a Mi-24V. Note the exhaust stains on the tail-boom.

a lethal radius of 10-12 m (33-39 ft). The new rockets began supplanting the S-5; yet the latter model remained in use right up until the Soviet pullout, despite complaints that the S-5s were only good for 'tickling the Mujahideen's heels' and scatter was high. To give credit where credit is due, the S-5 was still fairly effective in open spaces, simple and reliable, and the UB-32A pods were quick and easy to load – an undoubted asset during intensive operations with five or six sorties a day. Last but not least, huge stockpiles of S-5s had been built up and had to be expended to make room for new weapons!

As Mi-24 crews became more battle-hardened, tactics changed. 75% of the sorties were flown in the early morning hours to escape the blistering noonday heat. The first raid of the day was made at dawn in order to get the Mujahideen in the open when they were saying their morning prayers. Targets were distributed among crews in a strike group and the choppers armed accordingly; some crews would suppress the air defences and take out enemy personnel with FFARs and cluster bombs while others destroyed buildings with HE bombs. Some 100-kg bombs were fitted with delayed-action fuses and explosions would continue for the next 24 hours, preventing survivors from getting out of the rubble. (Occasionally, however, this method backfired; the Mujahideen would disarm the bombs and use them as land mines against Soviet convoys.) The last strike sortie of the day was flown late in the afternoon – again with a view to catching the Mujahideen in the open, since the Moslems had to bury their dead before sunset by all means.

The Mi-24's armour protection was generally considered to be adequate. The cockpits, main gearbox, hydraulic reservoirs, engine accessory gearboxes and oil tanks were protected by steel armour 4-5 mm ($0\frac{5}{32}$ to $0\frac{13}{64}$ in) thick which stopped more than two-thirds of all bullets. The bulletproof windshields were excellent; throughout the *Hind*'s career there wasn't a single case of a windshield being pierced, even though most of the hits taken by the Mi-24 were head on. The WSO's station took the greatest hammering; one Mi-24 came home with six nicks in the windshield made by heavy slugs. In Ghazni a Stinger missile exploded near a Mi-24's tail rotor, splintering the blades; still, sufficient tail rotor authority remained, enabling the helicopter to land safely.

For a long time the *Hind*'s most potent adversaries were the DShK HMGs and AA guns which accounted for 42% and 25% of the losses respectively. The engines and hydraulics were among the most frequently hit items. Still, twin-engine reliability and systems duplication often allowed the Mi-24 to make it home. The engines had automatic power reserve, the good engine going to full power if the other one was hit. Even with main gearbox oil pressure down to zero, the Mi-24 could stay aloft for 15-20 minutes, which was usually enough to get out of immediate danger.

In March 1987 a Mi-24P had its tail rotor pitch control chain shot away by machine-gun fire. With no directional control, the pilot somehow managed to reach Bagram and land. Touching down too fast, the chopper veered off the runway, careered across the entire base in a cloud of dust, miraculously missing a taxying Su-17M4, jumped over some vehicles and came to rest in an empty hangar. The crew was unhurt and the *Hind* returned to service after the rotor blades, the cannon (which had been wrenched loose) and the crushed nose fairing had been replaced.

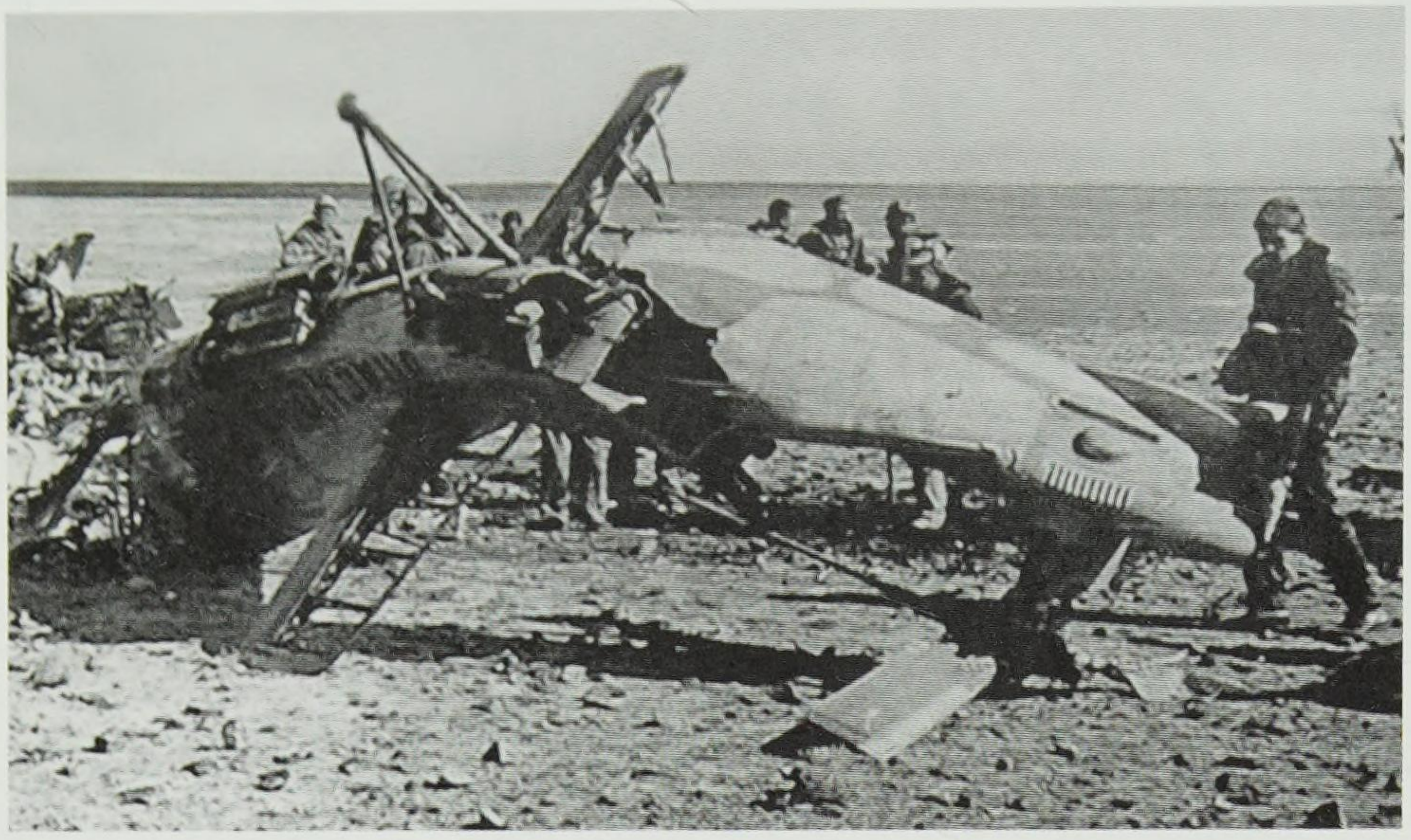
The helicopter crews made up the majority of the aircrew fatalities in the 40th Army. It got worse in the summer when the men were wearied by the heat and hard work and the hot-and-high conditions impaired aircraft performance, making the aircraft vulnerable. Sometimes three or four crews would be lost per month. A total of 127 Mi-24s were lost in Afghanistan – the second-highest figure among Soviet helicopters.

Analysis of combat losses led to the obvious conclusion that enhancing crew protection was the first priority. However, a head-on approach to the problem (fitting bulletproof side windows inside the cockpits) failed dismally; the 35-kg (77-lb) glass panels impaired visibility and made the cockpits so cramped that the crew literally had no room to turn their heads. The protective suit proposed in 1980 was no good, too – it looked and weighed like a medieval knight's suit of armour! Bulletproof vests were rarely used (mostly in winter, more for the sake of warmth than protection). So were the ZSh-3B 'bone dome' helmets (*za***shchit***nyy shlem* – protective helmet): the 3-kg (6.6-lb) helmet severely strained the neck muscles during high-G turns; things got better when the lightweight ZSh-5B titanium helmet became available.

More than 45% of the helicopters' combat losses were caused by in-flight fires and explosions. To remedy this, the fuel tanks were filled with explosion-suppression polyurethane foam. This proved effective, putting an end to in-flight fires at the cost of a 40-kg (88-lb) weight penalty and fuel filters being clogged with polyurethane particles. The latter was because originally the foam filler was supplied by Belgium, but deliveries were soon embargoed, forcing the industry to use a lower-quality domestic substitute which was more brittle.

Mi-24 pilots kept urging the Mil' OKB to provide some protection for the rear hemisphere but the experimental tail gun installation tested in 1985 proved disappointing. The *Hind* had to make do with the technician who

A Soviet Mi-24V flies over the outskirts of Kabul.



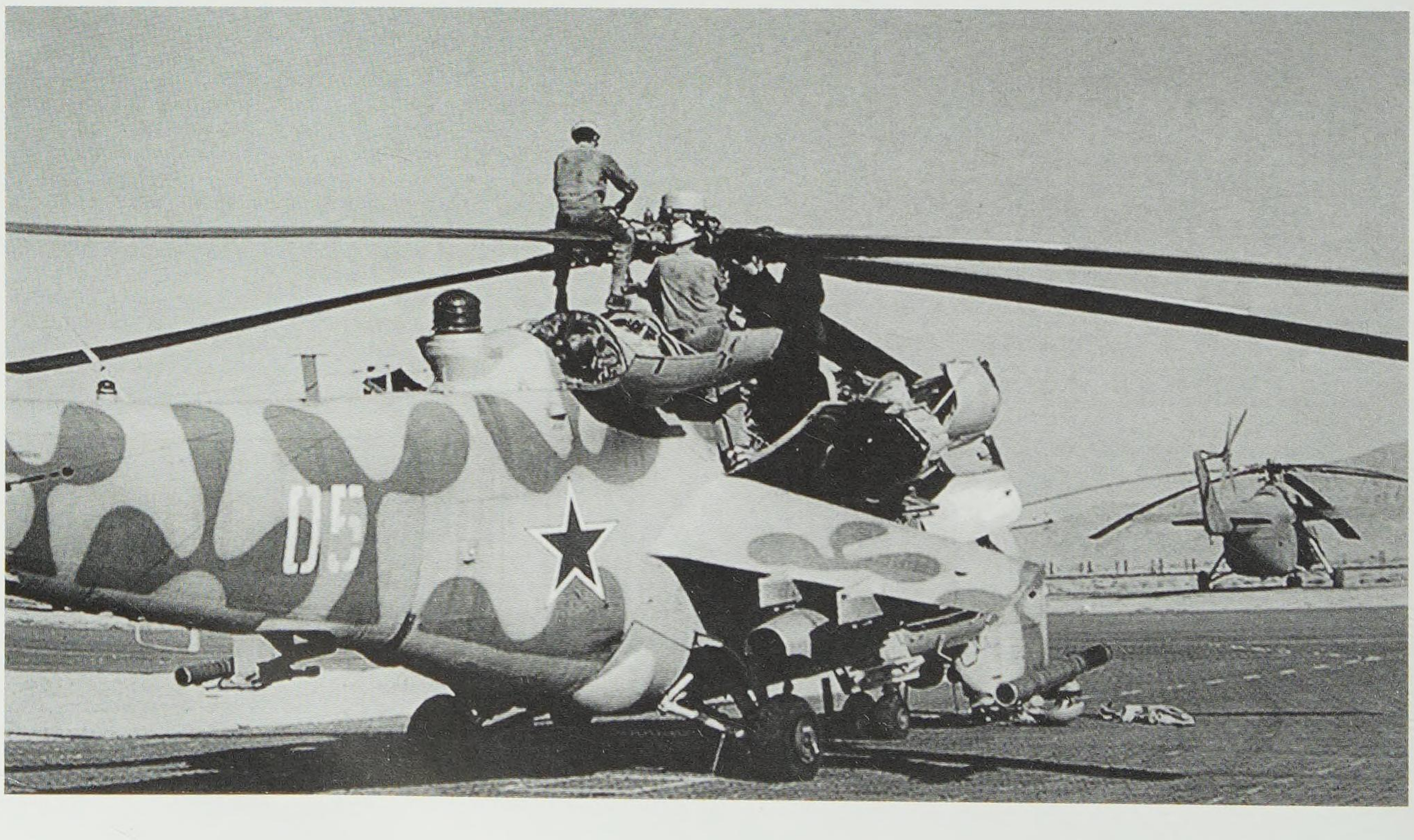
Mi-24V '37 White' from the 205th OVE (see page 296) was shot down on 16th February 1988 at Kobai village near Kandahar in the so-called 'agreement territory' controlled by the Afghans after the Mujahideen had been ousted.

sat in the troop cabin and doubled as a gunner – usually armed with a 7.62-mm (.30 calibre) Kalashnikov PK or RPK general-purpose machine gun. To give him a bigger field of fire the cabin doors were modified so that the upper segment could be opened separately, the lower segment providing support for the gunner. Sometimes two GPMGs were carried to avoid wasting time shifting the gun to the other side (which was dangerous as well; there was a case when the technician accidentally pulled the trigger while lugging the MG and shot up his own helicopter). When the high command ordered in the spring of 1986 that the technicians should stay on the ground 'to reduce unwarranted casualties', the crews objected, agreeing to fly without an extra gunner only if they chose to (when cutting weight was more important than extra protection).

Another 'Afghan upgrade package' introduced in the early 1980s was aimed at reducing the threat posed by MANPADS. Large triple-lobe air/exhaust mixers were fitted to the engine jetpipes to reduce the heat signature; being draggy and inconvenient to use, they did not become obligatory until 1983 when the shoulder-launched SAMs became a distinct threat. Originally, two pairs of ASO-2V chaff/flare dispensers were strapped on beneath the tailboom; in 1987 these were replaced by six ASO-2Vs on the fuselage sides, angled forward for wider coverage and sometimes faired to cut drag. Finally, an L-166V-1E ***Lip**a* (Linden; NATO *Hot Brick*) active IRCM jammer emitting a pulsing and darting signal was fitted aft of the main rotor head.

The IRCM suite proved most effective. Distracted by the flares and jammer pulse, the missile would start darting erratically and explode well away from the helicopter. The jammer stayed on throughout the sortie; if it failed the Mi-24 would manoeuvre into position above a sister ship, using its jammer for protection. Flares were fired not only during an attack but also when passing over dangerous spots – just to be on the safe side. A standard anti-SAM manoeuvre was developed: having spotted an incoming missile, the pilot would make a sharp turn and fire a salvo of flares. Unknowing observers who witnessed such 'fireworks' for the first time were amazed by the 'armoured chopper with streams of tracers ricocheting from it'!

Some of the proposed 'Afghan upgrades' (more powerful control actuators and the addition of vibration dampers) were never introduced. Others created new problems even as they eliminated old ones. For instance, Mi-24s and Mi-8MTs were fitted with a water/



Technicians attend to the main rotor head and main gearbox of Mi-24P '05 White'; a Mi-6 transport helicopter is parked in the background.

A lone Mi-24V departs on a mission against a backdrop of snow-covered mountains.

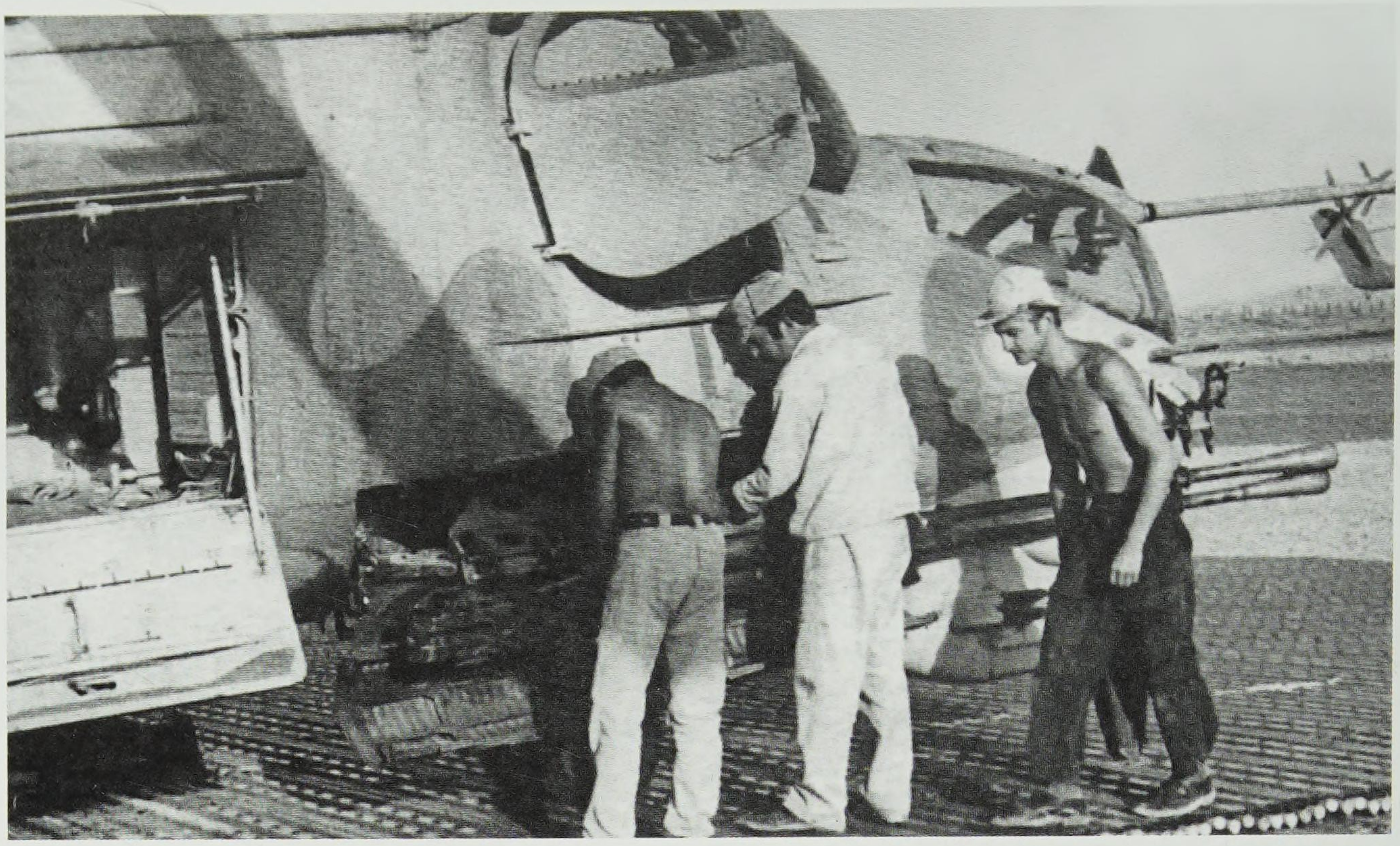
methanol injection system designed to make up for the power loss caused by other modifications (the intake filters and the exhaust IR suppressors both sliced 5-6% off the total power output). However, when the system was switched on, power would increase explosively, which was hard to handle; on one occasion a Mi-24 lost control and rolled over during take-off in Kabul when the system kicked in. Besides, the system required deionised water which was unavailable in Afghanistan; ordinary tap water was unsuitable because it quickly clogged the injector nozzles with sediment.

The other principal 'heli hero' of Afghanistan was undoubtedly the Mi-8; the Afghan War was its moment of glory – and its ultimate test at the same time. Originally, since the Soviet Union was not formally involved, 40th Army Mi-8Ts operating into Afghanistan in December 1979 wore DRAAF insignia; however, this masquerade was soon given up as pointless.

The range of missions performed by the *Hip* in Afghanistan is truly amazing. It included vertical envelopment, CSAR, casualty evacuation, CAS/bomb strikes, reconnaissance, command and control, escorting vehicle convoys, communications relay and so on. Thanks to the sturdiness of the choppers, which soon became legendary, and the dedication of their crews most of the objectives were accomplished and countless lives of Soviet servicemen – many of whom were 18- to 20-year-olds doing their two-year conscription term – were saved.

At first the Mi-8s were tasked mostly with moving personnel and materiel; however, barely two months into the war the share of strike missions started growing steadily. At this stage of the conflict the *Hips* were mostly armed with either four UB-16-57UMP FFAR

An armourer pauses after unpacking a 250-kg low-drag bomb from its packing crate.



Armourers prepare to load the 30-mm ammunition belt for a Mi-24P's cannon.

pods giving a total of 64 S-5 rockets or four free-fall bombs of up to 250 kg (551 lb) calibre (alternatively, two 500-kg (1,102-lb) bombs). The 'first-generation' Mi-8T/Mi-8TV could only carry early-model short-body bombs, whereas the Mi-8MT/Mi-8MTV featured upgraded pylons compatible with FAB-500M62 low-drag bombs and UB-32 FFAR pods. In the course of the war the Mi-8's armament changed considerably, reflecting the changing situation. For instance, while all of the cabin windows could be opened, troopers could use only five of them for firing their assault rifles (the third and fourth pairs were not used for fear of damaging the weapons pylons). The entry door and the window opposite it (the emergency exit on the Mi-8MT/Mi-8MTV) could be used for firing the more potent RPK machine gun; the Mi-8MT/Mi-8MTV introduced modified fixtures in the rearmost pair of windows allowing GPMGs to be fired through these as well.

The technician of a Mi-24 doubles as a gunner armed with a Kalashnikov PKT machine-gun.

If well planned and executed, the 'battle-bus' technique could be quite effective – especially in the early days of the war when the helicopter crews lacked experience with bombs and FFARs. For instance, the very first operation of the war in which the *Hip* was involved (the suppression of a mutiny in the Afghan Army's 4th Artillery Regiment in Nakhrin) succeeded in no small degree due to the participation of a flight of Mi-8s carrying snipers. En route to Nakhrin they dispersed a group of mounted rebels, subsequently discovering and wiping out an ambush with three artillery pieces. With air cover available, the barracks of the rebellious unit were captured in one swipe; the operation lasted less than 24 hours and cost the rebels about 100 men, seven guns and five vehicles for the loss of only two Soviet soldiers.

The Mi-8MT proved indispensible for delivering personnel and materiel to the smallest of helipads high up in the mountains, such as those near observation posts. Occasionally troops had to be disgorged at the hover with the helicopter resting only one wheel on the ground, as the landing pad was too small or the slope was too steep.

Sometimes Mi-8s acted as fire director helicopters with an artillery spotter on board, accompanying Mi-24 strike groups. The spotter was usually a local from the KhAD (*Khadamat-e Amniyyat-e Dawlati* – Dari for Ministry of State Security) who helped tell friend from foe in the vegetation below and identify the house in a village where the enemy had holed up. (Intelligence came from captured guerrillas, friendly villagers, 'undercover agents' or paid informers. The latter source was the least reliable; all too often an informer, having sold information on enemy positions to the Soviets, immediately went to the Mujahideen to warn of an impending air raid and get paid by them as well!)

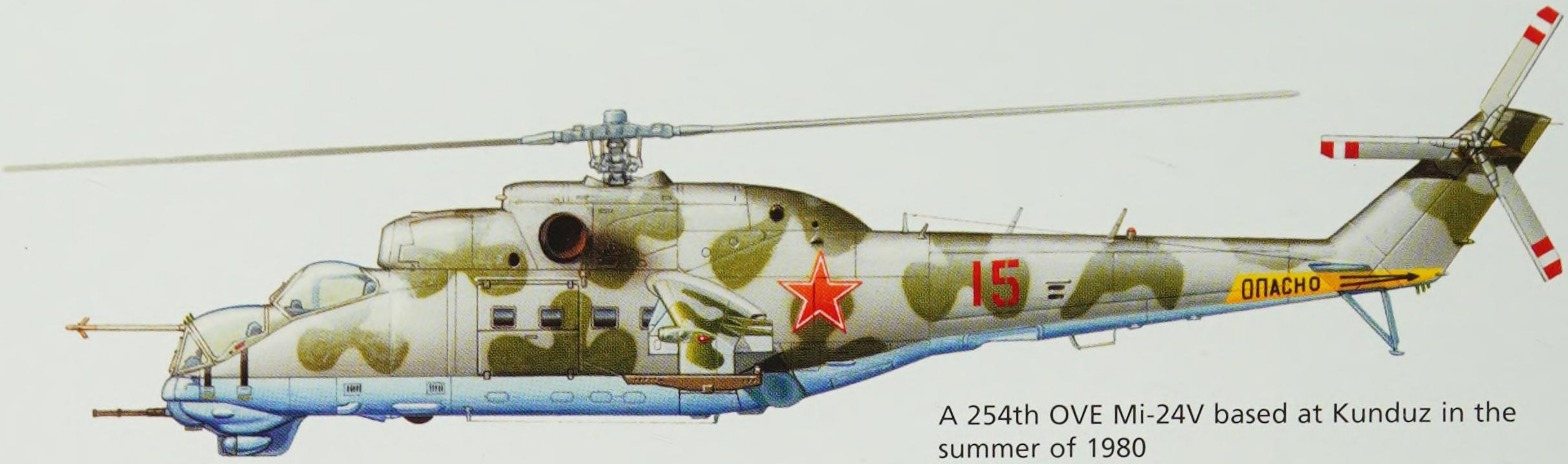
Another pair of *Hips* which always tagged along with a fixed-wing or rotary-wing strike group were the CSAR choppers. They were also tasked with post-attack reconnaissance which helped assess possible enemy retaliatory action.

In the course of the Afghan War the Army Aviation Mi-8s flew nearly 500 CSAR sorties, evacuating close to 1,000 downed airmen and 500 other Soviet servicemen. On the other hand, the CSAR Mi-8s needed protection themselves, as demonstrated by a tragic incident on 4th March 1987. Two Mi-8s took off to pick up the crew of a two-seat Su-17UM3 *Fitter-G* who had ejected less than two miles from Bagram. Unfortunately the escorting Mi-24s were delayed; when they belatedly arrived on the scene, both pilots of the *Fitter* had been murdered and both *Hips* shot down.

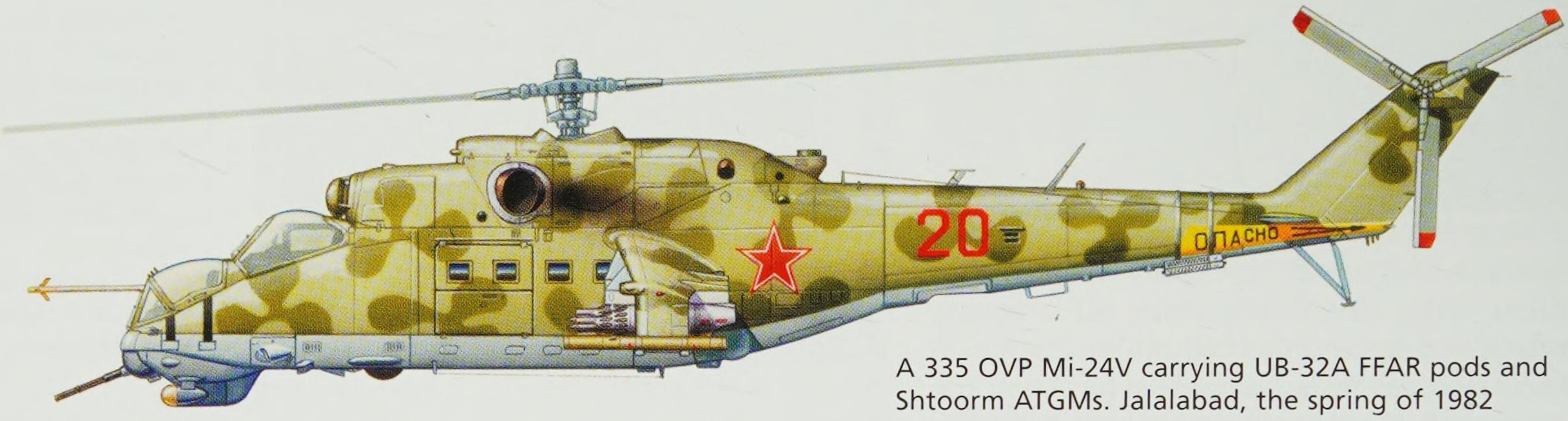
The Mi-8 also proved invaluable for the 40th Army's recovery and repair service, bringing recovery teams to spots where damaged helicopters had force-landed. After that, repairable helicopters were patched up on the spot if possible and flown out of 'Indian country'. If the damage was too serious to repair *in situ*, non-flyable helicopters were extracted by *Hip-Hs* after being stripped down to 2,500 kg (5,510 lb) – the Mi-8MT's maximum payload.

Early operational experience showed that the armament of the Mi-8T was inadequate for Afghanistan. Not waiting for the OKB to remedy this, the helicopter crews tried various field modifications. For instance, the regiment at Kandahar tried fitting the GSh-23L twin-barrel 23-mm cannon – the version used on fighters – to the Mi-8. Squadron commander V. Sidorov even went so far as to suggest

Though photography was not permitted on the Afghan TO, many servicemen could not resist the temptation of having their picture taken with a Kalashnikov RPK-7.62 GPMG and a helicopter as a backdrop.



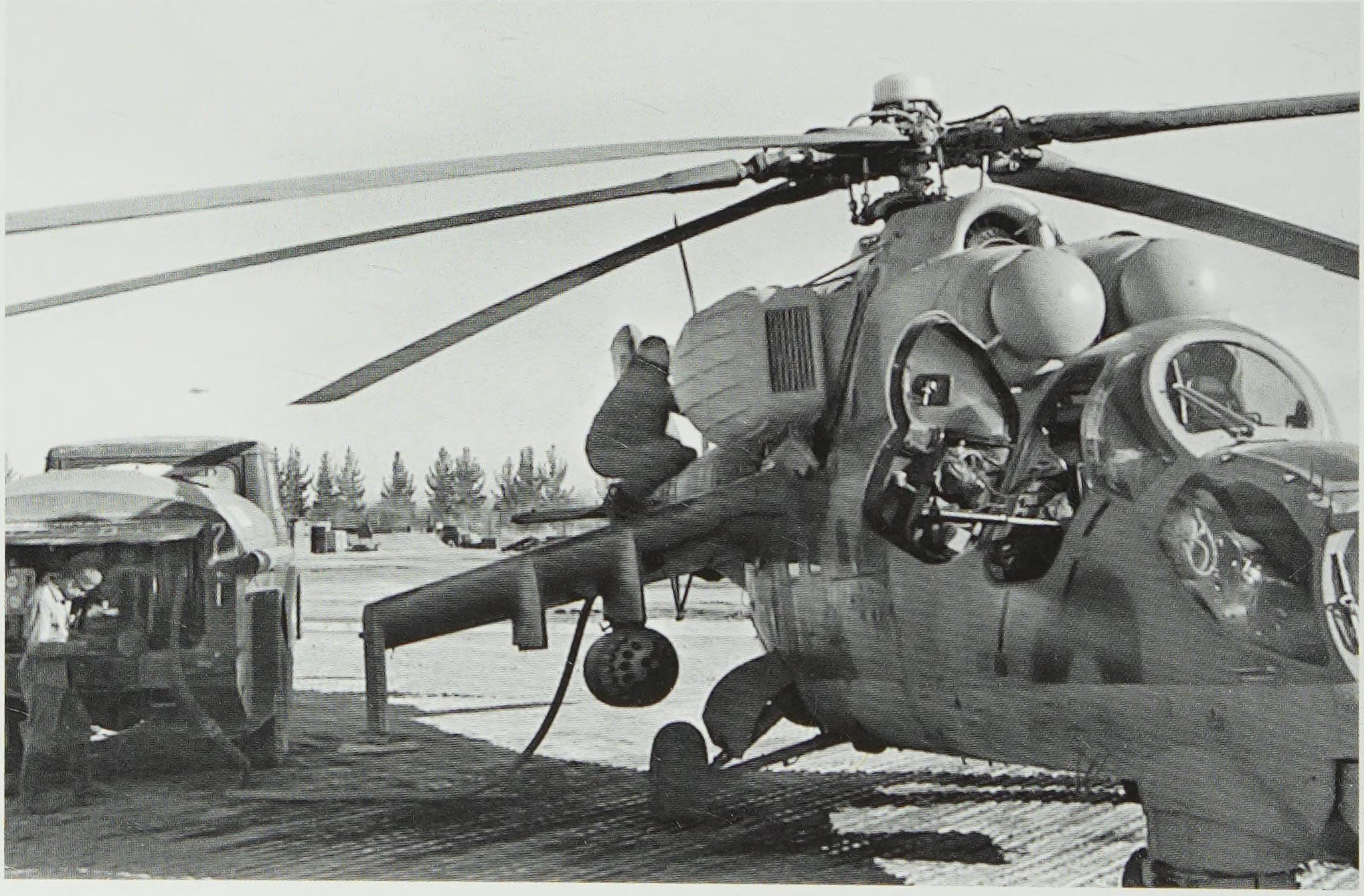
A 254th OVE Mi-24V based at Kunduz in the summer of 1980



A 335 OVP Mi-24V carrying UB-32A FFAR pods and Shtoorm ATGMs. Jalalabad, the spring of 1982

installing a 73-mm (2.87-in) 2A28 Grom (Thunder) semi-automatic cannon borrowed from the BMP-1 IFV under the belly of a Mi-8 and volunteered to test this installation. Fortunately the unit's maintenance department was sensible enough to turn down this suggestion – the helicopter's fuselage structure clearly would not have withstood the cannon's recoil.

During the aforementioned trip to Afghanistan in April 1980 General Designer Marat N. Tischchenko also visited several Mi-8 units, meeting service pilots and gaining first-hand acquaintance with the operating condi-



A TZA-7,5-500A fuel bowser tops up the tanks of a Mi-24V prior to a sortie.

Maintenance in progress on a Mi-24P's GSh-2-30 cannon.

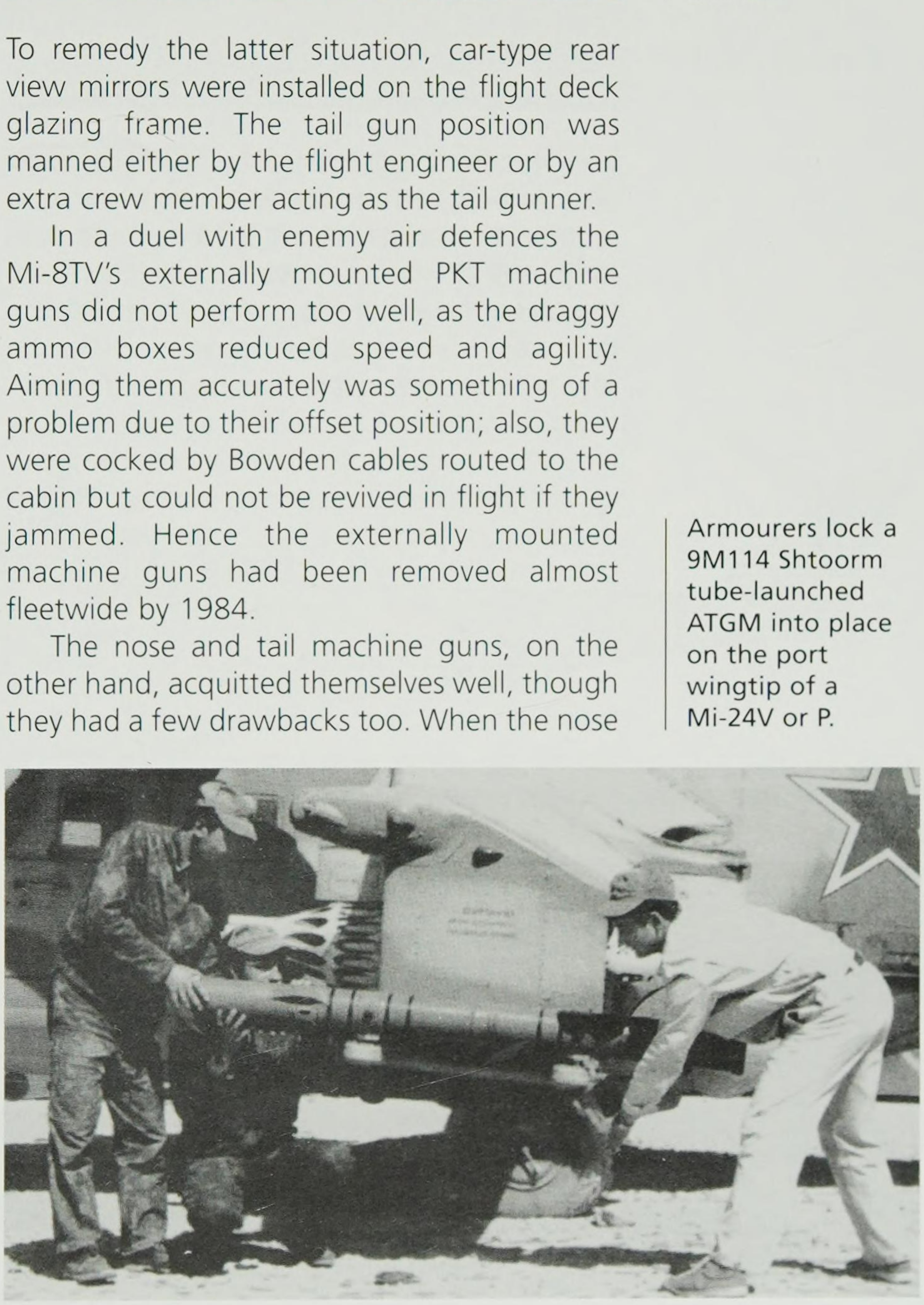
tions, and measures were taken very soon. Thus, as early as June 1980 the Mi-8TV got additional armour and armament installed *in situ* by the manufacturer's technical teams. The upgrade package was built around the Kalashnikov PKT machine-gun with an electric trigger mechanism meant for tank turrets (*poole****myot*** *Ka****lash****nikova* ***tahn****kovyy*). While having the same 7.62-mm (.30) calibre as the RPK hand-held version (*rooch****noy*** *poole****myot*** *Ka****lash****nikova)*, the PKT had the advantage of utilising a different round with a more powerful charge. It was an excellent weapon combining a high rate of fire with a long lethal range and high accuracy (the latter earned it a reputation as a 'sniper's weapon'). It is a noteworthy fact that the Mil' OKB had preferred a tank weapon over purpose-built aircraft weapons, such as the 7.62-mm GShG-7,62 four-barrel Gatling machine gun, which was too complex and capricious for use on a combat helicopter.

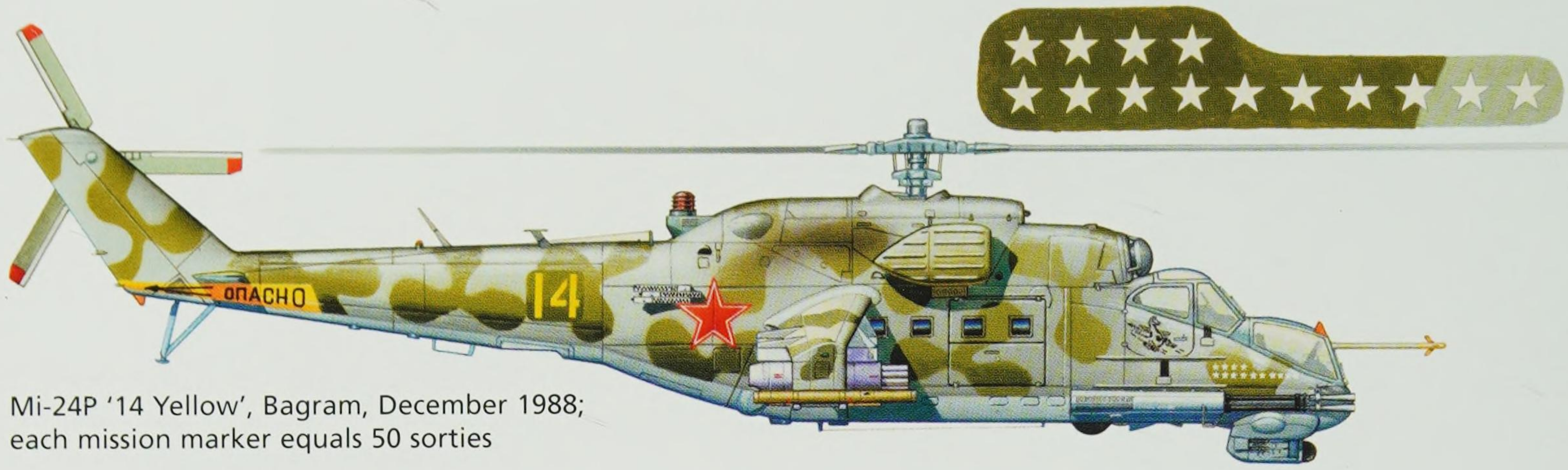
In addition to the gimballed PKT in the nose (fired by the flight engineer), the Afghan upgrade included two more PKTs with ammo boxes on top of the external stores outriggers and one more flexible PKT installed on a removable mounting near the escape hatch in the starboard clamshell cargo door. The latter was the answer to the increasingly frequent attempts to attack the helicopter's unprotected rear hemisphere, especially when the helicopter was completing a firing pass and the pilots could not see what was going on behind them. To remedy the latter situation, car-type rear view mirrors were installed on the flight deck glazing frame. The tail gun position was manned either by the flight engineer or by an extra crew member acting as the tail gunner.

In a duel with enemy air defences the Mi-8TV's externally mounted PKT machine guns did not perform too well, as the draggy ammo boxes reduced speed and agility. Aiming them accurately was something of a problem due to their offset position; also, they were cocked by Bowden cables routed to the cabin but could not be revived in flight if they jammed. Hence the externally mounted machine guns had been removed almost fleetwide by 1984.

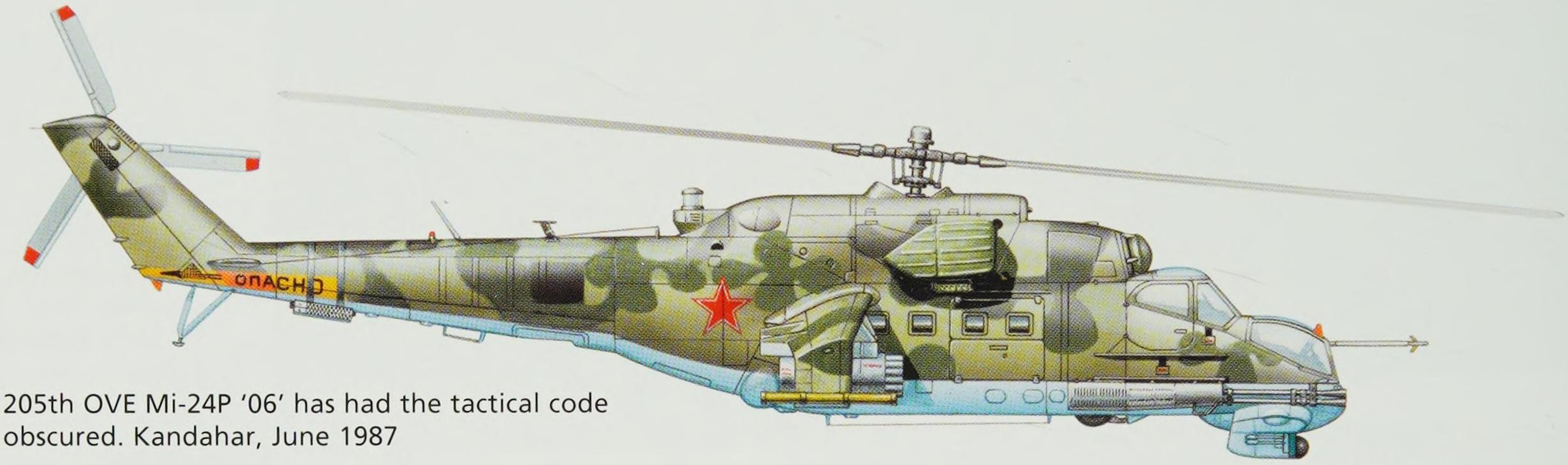
The nose and tail machine guns, on the other hand, acquitted themselves well, though they had a few drawbacks too. When the nose

Armourers lock a 9M114 Shtoorm tube-launched ATGM into place on the port wingtip of a Mi-24V or P.





Mi-24P '14 Yellow', Bagram, December 1988; each mission marker equals 50 sorties

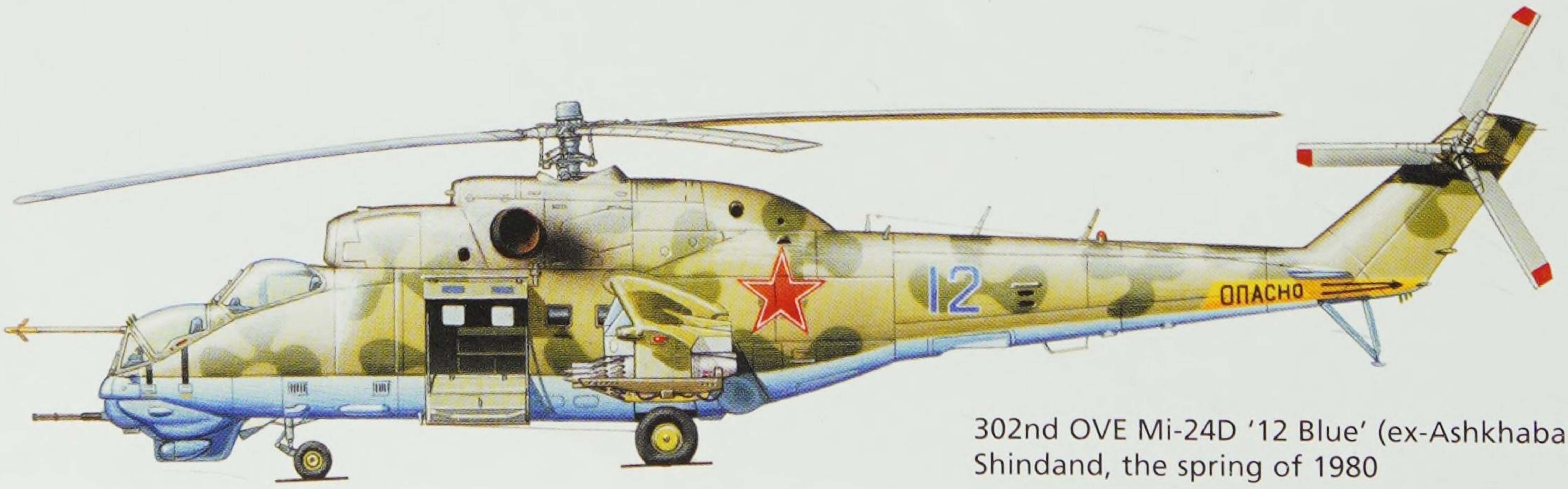


205th OVE Mi-24P '06' has had the tactical code obscured. Kandahar, June 1987

gun was fired, powder gases filled the flight deck which had to be aired. The rear gun required the escape hatch to be opened, and on the Mi-8T the cover was simply jettisoned; to prevent unwarranted losses of these covers they were often removed beforehand. On the Mi-8MT the cover opened inwards, but replacing it in flight was impossible all the same; as a result, on landing the helicopter turned into an almighty vacuum cleaner, sucking in dust and debris through the hatch! (To remedy this, some Mi-8MTs were field-modified to feature a hinged cover opened and closed as required.)

Interestingly, the nose machine-gun installation affected the aircraft's compass, which would go crazy every time the gun was moved, the needle pointing in the same direction as the barrel. The problem was cured by moving the sensitive instrument away from the massive weapon.

Additionally, the upgraded Mi-8TVs could be armed with a 30-mm (1.18 calibre) AGS-17 ***Pla**mya* (Flame) automatic grenade launcher. Its undoubted virtues included a high-power round which, despite having the same calibre, packed 50% more explosive than the round of the 2A42 automatic cannon fitted to the BMP-2 IFV. Unsurprisingly, the AGS-17's simplicity and ease of operation also appealed to the armourers, who did not bother to develop a special aircraft version of the weapon and simply installed a stock infantry version complete with the bulky tripod in the helicopter's entry doorway. The only modifications were the addition of wooden chocks for the tripod's



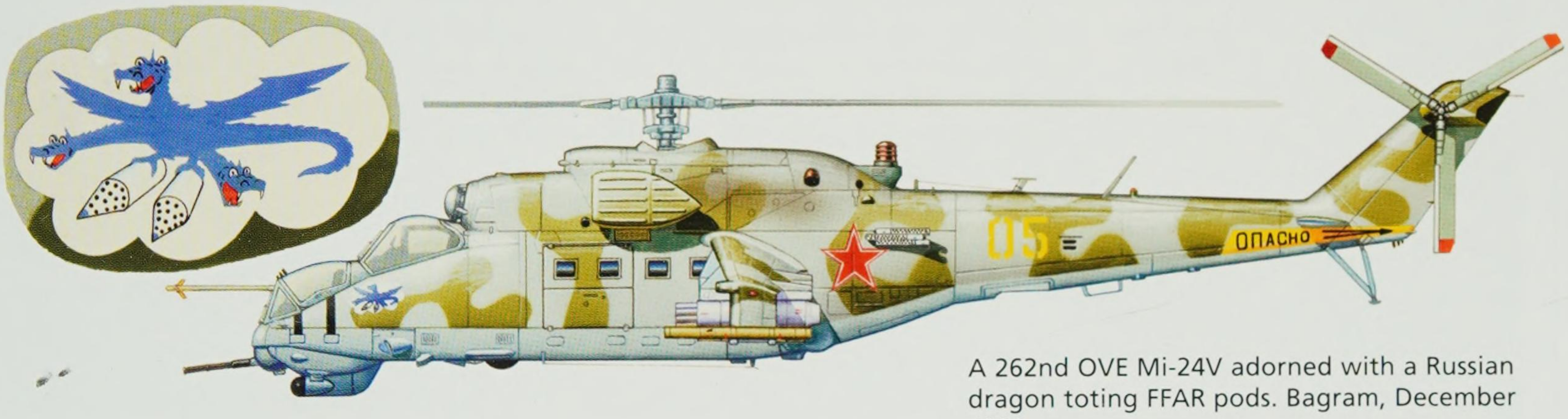
302nd OVE Mi-24D '12 Blue' (ex-Ashkhabad), Shindand, the spring of 1980 legs and braces which secured the weapon to the cabin floor, absorbing the AGS-17's powerful recoil. The grenade launcher was fed from a drum-type magazine holding 29 rounds; the latter were either VOG-17A rounds equipped with a 280-gram (9.88-oz) fragmentation grenade or VOG-17M rounds equipped with a 'bouncing' grenade which rebounded on impact and then exploded, raining splinters down on personnel taking cover in trenches and the like.

The grenade launcher found fairly wide use on the Mi-8 in 1980-81. For instance, in the 181st OVP's *Hip* squadron (it should be noted here that OVPs within the 40th Army operated a mix of Mi-8s and Mi-6s, as distinct from the OBVPs which operated a mix of Mi-8s and Mi-24s) the daily expenditure of VOG-17 rounds amounted to an impressive 85-300, depending on the intensity of the fighting.

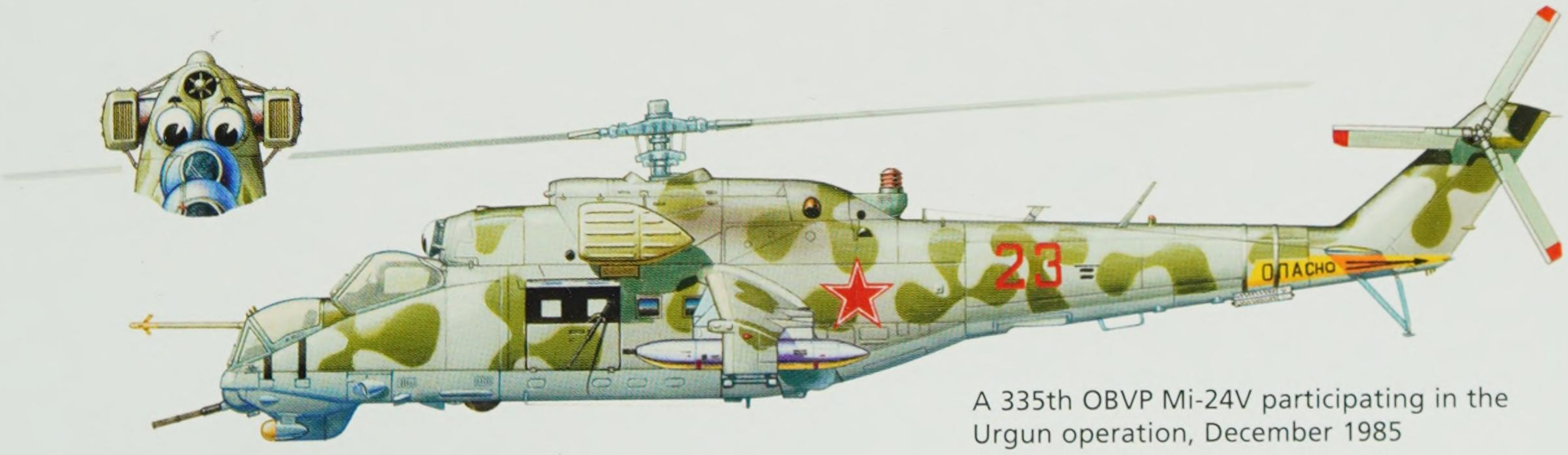
On the minus side, the AGS-17 had a low muzzle velocity – you could actually see the grenade flying after firing it – and a low rate of fire. The rounds, which were equipped with excessively sensitive impact fuses, were dangerous to handle. Finally, the massive weapon obstructed the doorway, making carriage of troops impossible and complicating evacuation in the event of a shootdown. All this eventually caused the AGS-17 to be 'grounded'. A special helicopter version designed for installation in the GUV-1 weapons pod did appear eventually, but it did not rate highly for much the same reasons.

The flight deck armour was augmented by external 5-mm steel shields attached to the

In Afghanistan the pilots were issued AKS-74U collapsible-stock/short-barrel assault rifles to fight back the Mujahideen if they were shot down.



A 262nd OVE Mi-24V adorned with a Russian dragon toting FFAR pods. Bagram, December 1988



A 335th OBVP Mi-24V participating in the Urgun operation, December 1985

Looking a bit lop-sided, a Mi-24V taxies past a sister ship and an An-12BK transport.

forward fuselage sides; these were mostly seen on the Mi-8MT/Mi-8MTV. Inside the flight deck, additional armour panels were attached to the rear bulkhead, the walls (partly obscuring the blister windows from within), the floor and under the instrument panels (ahead of the pilots' feet). The forward shields were originally fixed, rendering the lower row of the flight deck glazing unusable, which was no good; therefore on later aircraft they were built in several sections, folding away for take-off and landing to maximise visibility – an important point in the dusty conditions of Afghanistan.

In addition to the standard armour weighing 180 kg (400 lb), the pilots often hung bullet-proof vests on the flight deck walls or placed them on the floor under their feet. Bullet-proof vests were also used to protect the auxiliary fuel tank in the cabin and provide extra protection for the tail gunner.

For extra survivability some of the helicopters were completed with an inert gas pressurisation system for the fuel tanks reducing the risk of fire and explosion when hit. A carbon dioxide bottle was installed in the cabin, but the supply was limited and the flight engineer would open the cock only when there was imminent danger of coming under fire.

Stage B of the 'Afghan upgrade' programme involved installing ASO-2V chaff/flare dispensers, followed by the same sort of exhaust/air mixers and L-166V-1 IRCM jammer as on the Mi-24. These measures were meant to protect the Mi-8 against MANPADS. Despite early intelligence reports that the Mujahideen had MANPADS, there were none in the first year of the war (the numerous reports of 'SAM launches' in 1980-81 were erroneous; actually the rebels had used RPG-7 anti-tank grenade launchers against low-flying helicopters!). It was not until 1983, when the SAM threat increased, that the bulky exhaust/air mixers became mandatory.

The few 'Afghan improvements' effected by the manufacturers included the design of the sight for the nose-mounted PKT machine gun. Originally this was a rather crude affair made of thick steel strip; the 'cross-hairs' were more like 'cross-ropes', obscuring the target and making accurate aim all but impossible. This design later gave way to two concentric rings, which improved things dramatically.

It is a noteworthy fact that the main thrust of the effort to improve the Mi-8's armament was directed at anti-personnel weapons. Machine guns and grenade launchers had an advantage over FFAR pods: they could be reloaded as long as there was something to reload, permitting prolonged operation with as many firing passes as necessary. In contrast, FFAR pods turned into useless ballast as soon as the rockets were expended. Sometimes, though, when the objective was known to be particularly resistant to damage, the helicopters carried a supply of rockets in the cabin for reloading the pods after landing at a safe spot not far from the target.

The Mi-8's weapons fit ensured continuity of fire during an attack. First, a salvo of rockets was unleashed at a safe distance from the target (1,300-1,500 m/4,260-4,920 ft), well out of range of the enemy's air defences, to suppress initial resistance. Then the bombs were dropped on enemy strongholds, the crew spraying the target with machine-gun fire all the while. Considering that sorties were always flown in pairs at the very least (so that if one chopper went down the other could provide cover for the downed crew), the target was sure to be under fire from at least one helicopter throughout the attack.

Crew workloads were extremely high. The crews made five or six sorties daily, spending 15-18 hours in the air and at the airfield each day; sometimes they relieved each other right in the cockpits to maintain round-the-clock readiness. The flight engineers responsible for the aircraft's condition and the armourers were the worst off. If the overall workload in Afghanistan was doubled as compared to 'Unionside' conditions, the weapons arming workload was 24 (!) times greater. Every available man had to handle bombs, load FFAR pods with rockets, cut open the zinc boxes of machine-gun ammunition and work the 'meat grinder' device which filled ammunition belts with bullets.

This, and the Mi-8's good reliability record, caused the choppers to be operated on a technical condition basis, with maintenance as required rather than as prescribed by manuals. Time-expired engines were allowed to clock up to 50 hours of 'life after death' before replacement, to say nothing of certain other equipment items which simply worked until they kicked the bucket. The same applied to machine guns; nobody cared any longer how many rounds had been fired as long as the weapon worked. To give credit where credit is due, the PKT turned out to be a highly reliable weapon, working when it was long overdue for overhaul – in spite of the heat and the all-pervading dust.

Mi-24Ps and Mi-8MTs share a parking area during a pause between operations.

Figures quoted in the Russian popular press give some indication of the intensity of *Hip* operations during the war. On 11th March 1981 a flight of Mi-8s from Faïzabad escorting a supply convoy expended 806 S-5 FFARs, 300 rounds for the AGS-17 grenade launcher and 14,200 rounds of machine-gun ammunition (that is, more than 50 complete ammunition belts!). The flight leader's aircraft came back with just eight bullet holes – an indication that the Mujahideen were taking such a pounding that they were all but unable to return fire.

On 26th May 1981 a group of four Mi-8Ts and Mi-8MTs obliterated a camp used by a Mujahideen gang for rest and recreation. Dropping four 500-kg bombs and firing 255 S-5KO rockets, the helicopters destroyed the house occupied by the bandits and the adjoining buildings, then hosed down the area with 58 grenade launcher rounds and a hail of machine-gun fire. Thus, instead of R & R (rest and recreation) the guerrillas got some D & D (death and destruction).

However, war is war, and often the helicopter crews found themselves on the receiving end. Recognising the threat posed by enemy aviation, the rebels strengthened their anti-aircraft defences dramatically during the third year of the war. As already mentioned, anti-tank grenade launchers were used with considerable success against low-flying choppers; if it scored a direct hit, the shaped-charge rocket-propelled grenade could inflict serious damage. Increasingly more often the Mujahideen used 12.7-mm (.50 calibre) DShK HMGs and the even more lethal 14.5-mm (.57 calibre) Vladimirov KPV HMGs. The latter model (which is the main weapon of the Soviet BTR-60PB and BTR-70 APCs) could score a hit against an aerial target at up to 1,300-1,500 m (4,260-4,920 ft) and 1.5-2 km (0.9-1.25 miles) range.

The Mi-8s suffered the highest losses among Soviet helicopters in Afghanistan; 174 were lost to all causes throughout the conflict. No fewer than 95 *Hips* were lost in 1985-89 alone; 1986 was the worst year, with 33 casualties.

On 23rd February 1980 (as noted earlier, 23rd February was Soviet Army Day and is still celebrated in modern Russia as Homeland Defenders Day) a pair of 280th OVP Mi-8s took off from Kandahar to intercept a suspicious vehicle convoy reported by army intelligence. Following the tracks in the sand, the crews quickly located the vehicles hidden among the dunes and decided to try 'tickling' them with machine-gun fire. However, no sooner had the co-pilot on one of the choppers slid open his blister window and poked out his Kalashnikov AKS-74 assault rifle than the canvas cover on the nearest pick-up was flung wide open, revealing a beardee with a DShK HMG who opened fire immediately. Although the guerrilla fired at almost point-blank range, miraculously the Soviet chopper suffered nothing more than a few bullet holes in the airframe – and returned fire at once, blasting the convoy with rockets. Immediately afterwards, however, the helicopter had to make a forced landing when one of the engines started losing oil. Having nothing else to repair the punctured oil tank with, the crew temporarily stopped the leak with a piece of modelling clay (which they carted around on the off-chance that it might come in handy) – and returned safely to base.

Others were far less fortunate. On 31st July 1980 a 250th OVP Mi-8 was shot up by DShK fire at point-blank range while coming in to disgorge troops south of Ghazni. The fuel tanks and engines were riddled with bullets, and a spark ignited the leaking fuel. The crew barely managed to land the fiercely burning helicopter which exploded no sooner than they had jumped clear. On 29th January 1985 a 280th OVP Mi-8T was shot down by a ZGU-1 AAA installation while following the Kabul-Kandahar road 165 km (102.5 miles) east of Kandahar; the helicopter caught fire and crashed, killing the crew of three. On 2nd March same year a 50th OSAP Mi-8MT photographing a prospective LZ was hit by a shoulder-launched SAM which took off the tailboom; the pilots managed to parachute from the uncontrollable helicopter but the flight engineer didn't and lost his life.

The advent of MANPADS on the Afghan theatre of operations forced the choppers up to higher altitudes where the on-board machine guns were useless. To top it all, the Mujahideen now had lookouts equipped with mobile radios posted on hilltops and mobile anti-aircraft guns mounted on jeeps which could pop up unexpectedly almost anywhere. Most often the Mi-8s were damaged by ground fire in the vicinity of landing zones; the flight deck glazing accounted for 42% of the hits, as the rebels tried to kill the pilots if possible.

Not all Mi-8 losses in Afghanistan were caused by enemy action. For example, on 20th June 1985 a Mi-8MT crash-landed 62 km (38.5 miles) north-east of Bagram due to pilot error; the crew and troopers managed to vacate the aircraft before it was consumed by flames. Another *Hip-H* was damaged beyond repair in similar circumstances on 17th July 1985, landing hard in a tailwind on a helipad 73 km (45.3 miles) north-east of Bagram. On 29th November 1985 one more Mi-8MT was damaged due to brownout (spatial disorientation in dusty conditions) while landing 15 km (9.3 miles) north-west of Kabul.

The final argument which caused the external machine guns and the grenade launcher to be removed from the 'first-generation' choppers was the modifications aimed at improving survivability. These added about 500 kg (1,100 lb) to the Mi-8TV's empty weight, causing the helicopter to become too sluggish; in fact, the *Hip-E* had trouble taking off in hot-and-high conditions. On the other hand, the Mi-8MT with its much more powerful engines and higher performance suffered few changes to the armament, and the reasonable sufficiency principle prevailed.

A typical period shot of a brave Mi-24P pilot in camouflage attire with a ZSh-7 helmet and an AKS-74U.

Starting in the spring of 1980, the Mi-8MT was actively used for mining the mountain trails leading into Pakistan, which were used by the rebels to replenish their supplies. To this end the *Hip* was fitted with the VSM-1 aerial mine-laying system (*voz**doosh**naya sis**tem**a mi**nee**rovaniya*) comprising four pods, each of which featured 29 KSF-1 cassettes with 72 anti-personnel mines apiece. POM-1 fragmentation mines were little used, since they were too conspicuous on the rocks. The PFM-1 high-explosive action mine was much better suited to these conditions; despite a weight of only 80 grams (2.8 oz), its charge of liquid explosive was powerful enough to cripple whoever stepped on it. Within just one minute the Mi-8 could disperse an amazing 8,352 mines, covering an area 2 km (1.24 miles) long and 15-25 m (50-80 ft) wide.

Although Pakistan was not formally involved in the war, it sympathised with the Mujahideen; hence Pakistani Air Force fighters frequently intruded into Afghan airspace to attack Soviet military aircraft. For self-defence in these situations some Mi-8s were reportedly armed with R-60 short-range air-to-air missiles.

Summing up this section, it would be right to say that Soviet operations in Afghanistan

Pilot Vener Mukhametgareyev and WSO Sergey Sheyin – the crew of a Mi-24P in 1987. Note the tactical code '138' displayed on a card behind the pilot's windshield.

would have been far less successful (remember, we are not touching on the political aspects of the war here) and the death toll would have been much higher if it were not for the trusty Mi-8.

The Afghan War marked the culmination of the Mi-6 heavy-lift helicopter's combat career in the Soviet Armed Forces. The *Hook* made an excellent showing during flights high up in the mountains, confidently maintaining an altitude in excess of 6,000 m (19,690 ft) which was unattainable for the smaller Mi-8s. The main missions flown by the Mi-6 during that war were transportation flights. Only very rarely were they involved in assault operations – above all, due to the risk of high personnel losses in the event of a shootdown. Transportation of slung loads was performed in exceptional cases, mainly for the purpose of salvaging damaged helicopters of other types. To cater for the needs of the relatively small 40th Army, it proved necessary to build up a very large helicopter task force which included Mi-6s operated by the 181st and 280th OVPs, with as many as 20 machines per squadron. One more squadron of Mi-6s staffed with Soviet specialists operated in support of the government troops of Afghanistan.

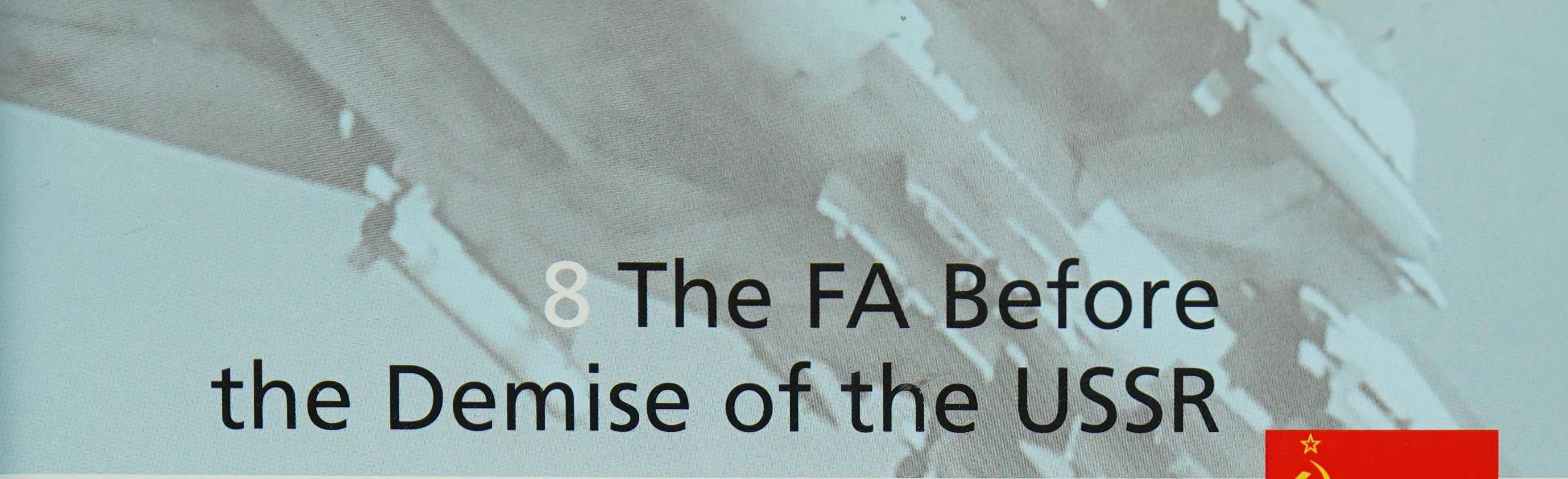
Regrettably the Mi-6 suffered losses, too. For example, on 18th May 1985 a 320th OVE Mi-6 carrying 7 tons of fertiliser to Bakharak, with a pair of Mi-24s flying escort, was hit by a rocket-propelled anti-tank grenade fired by a guerrilla sitting on a hilltop. The crew managed to land the burning helicopter, but as they and the passengers abandoned ship they were met by a hail of machine-gun fire from the Mujahideen, many of them losing their lives. Luckily a Soviet tank detachment came to the rescue, saving some of the occupants. On 3rd October same year a 181st OVP Mi-6 was shot down by AAA 6 km (3.73 miles) north of Talukan. Overall losses amounted to 28 *Hooks*.

263rd OSAE commander Lt.-Col. V. M. Bondarenko returns home from Afghanistan.

The Mi-26 *Halo* heavy-lift helicopter started its combat career in the Afghan War. Albeit Mi-26s were not deployed in Afghanistan, missions were flown over the northern areas of the country by machines from the Border Guard Troops' 23rd Helicopter Regiment stationed in Tajikistan. They fulfilled the typical tasks for heavy helicopters: transportation of various loads, delivery of replenishment troops, CASEVAC – and, sadly but inevitably, carrying the bodies of servicemen killed in action back to the USSR. In the course of such missions the crews had to land on pads situated up to 4,000 m (13,120 ft) above sea level. There was no combat attrition, but on 18th October 1985 a Mi-26 was lost in a fatal accident when the tail rotor drive shaft broke. The helicopter was on a positioning flight from Dushanbe with the intention of uplifting a load of ammunition destined for Kalat-Khuleb in Afghanistan.

The overall losses of the Soviet Air Force in the Afghan War amounted to 118 (some sources say 124) fixed-wing aircraft and 333 helicopters. However, thanks to the well-organised CSAR service most of the downed aircrews (that is, if they survived the shootdown) were rescued to fly and fight another day.

Immediately after the Soviet pullout in February 1989 the Soviet MoD analysed the results of the Afghan campaign. One of the conclusions was that, in order to maximise efficiency and reduce combat losses and casualties, the Army Aviation should be directly subordinated to the ground forces, as the name suggests. However, many of the brave and highly skilled officers who had fought in Afghanistan found themselves at odds with the Army's bureaucratic machine and its unreasoningly inflexible methods; combat experience had taught them the hard way how to fly and flight, but their ideas did not fit the mould. Hence many top-notch airmen were forced out of the service by the top brass, who saw them as dissenters.



8 The FA Before the Demise of the USSR

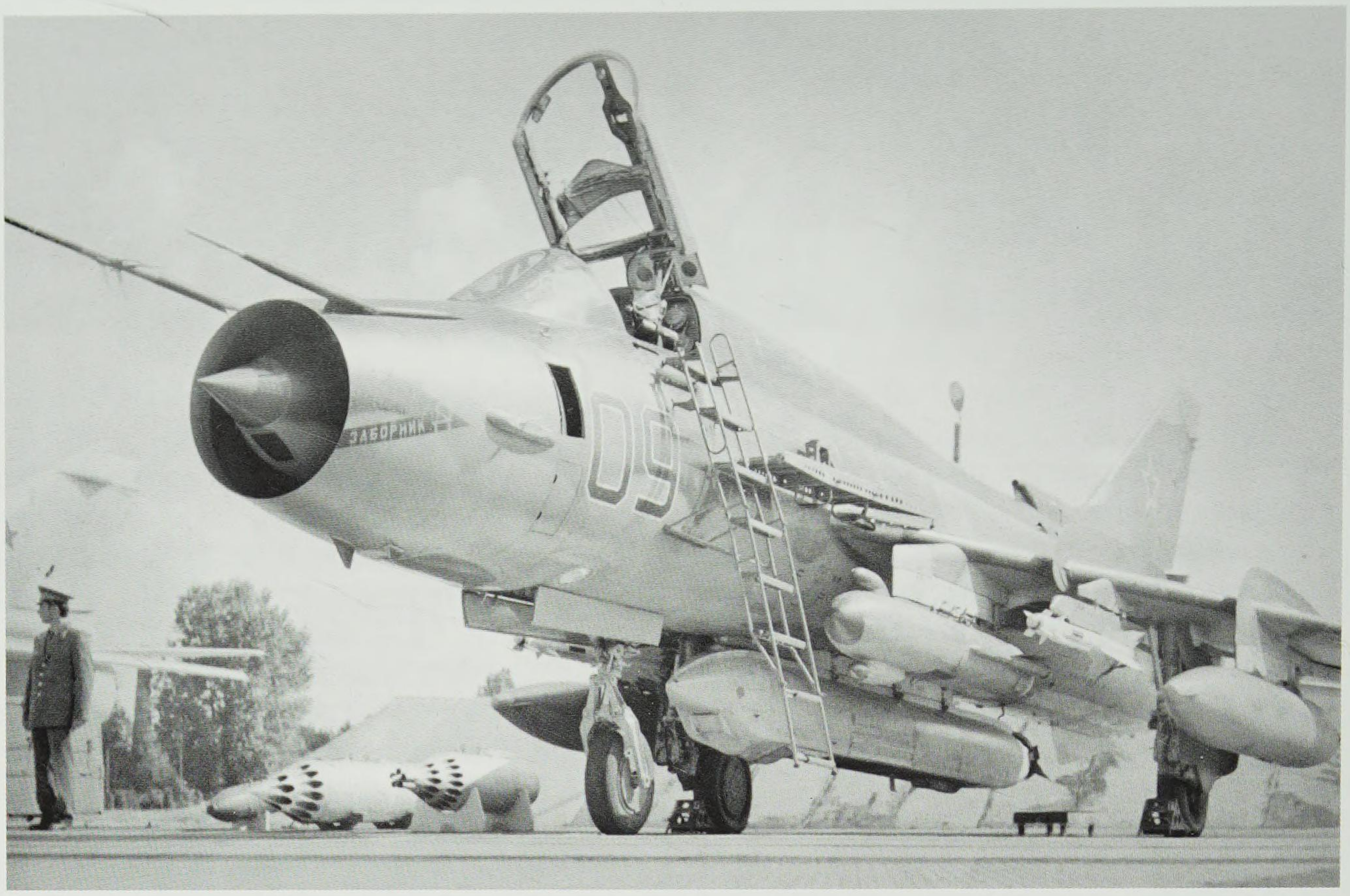
The 1980s were the time when the Soviet Air Force's Tactical Aviation was at the peak of its strength. It was an instrument of the commanders at would-be theatres of operations, reporting directly to the commanders of the fronts (or, in peacetime, of the military districts). The FA's principal tasks at the time were:

- destruction of the adversary's nuclear-tipped ballistic missiles, aviation, reserve forces and important objectives in the theatre area;
- rendering CAS to ground troops by destroying enemy troops and ground or maritime surface targets (primarily mobile ones) in the immediate theatre/tactical area;
- providing air cover for troops and important military and civilian objectives;
- ensuring the unimpeded passage of Long-Range Aviation (strategic bomber arm), Naval Aviation and Military Transport Aviation aircraft en route to their targets, ensuring airborne and maritime assault operations and providing CAS for the assault groups securing bridgeheads;
- airlifting personnel and materiel over short distances;
- setting up minefields;
- operational and tactical aerial reconnaissance.

As had been the case in previous years, to this end the Tactical Aviation was subdivided into branches – tactical bomber aviation, fighter-bomber aviation, attack aviation, fighter aviation, reconnaissance aviation, transport aviation and special-mission aviation. The latter kind included ECM aircraft and helicopters, tactical-level airborne command posts and so on.

In the 1980s the Soviet Air Force's Tactical Aviation order of battle comprised 15 formations, 12 of which were deployed on Soviet territory and three more abroad (in Eastern Europe).

In the mid-1980s the Tactical Aviation enjoyed the use of a well-developed airfield network which included per-



Su-17M4R '09 Red' at a military hardware display, with KKR-1 camera pod, SPS-141MVG ECM pod, R-60 AAMs and drop tanks. Note the gangway between the ladder and the wing; it was developed for access to the Su-17UM's rear cockpit but was standard for single-seaters, too.

Previous page: A Su-17M4R receives crew chief reports to the pilot that the aircraft is mission ready. Note the KKR-1 camera pod and the SPS-141MVG jammer pod. An APA-5 ground power unit stands by to start up the engine.

manent bases with concrete runways, auxiliary airfields with prepared dirt runways and purpose-built highway strips. Special independent airfield maintenance battalions (OBATO – *ot**del'**nyy batal'**yon** aero**drom**no-tekh**nich**eskovo obes**pech**eniya*) and independent communications & radio technical support battalions (OBS RTO – *ot**del'**nyy batal'**yon** **svya**zi i **rah**diotekh**nich**eskovo obes**pech**eniya*) were responsible for the upkeep and functioning of these bases. Construction and reconstruction of the airfields (runway resurfacing and so on) was mostly the domain of independent engineer battalions (OIB – *ot**del'**nyy inzhe**ner**nyy batal'**yon***) reporting directly to the air armies. Not infrequently the latter had their own plants producing prefabricated reinforced concrete elements for constructing runways, taxiways and airfield structures, ensuring that the airbases were combat-ready at all times. One such plant, coupled with an engineering battalion, could manage to replace the concrete pavement of a typical Tactical Aviation airfield with a 2,500-m (8,200-ft) runway completely within six months.

Tactical Aviation order of battle in the 1980s

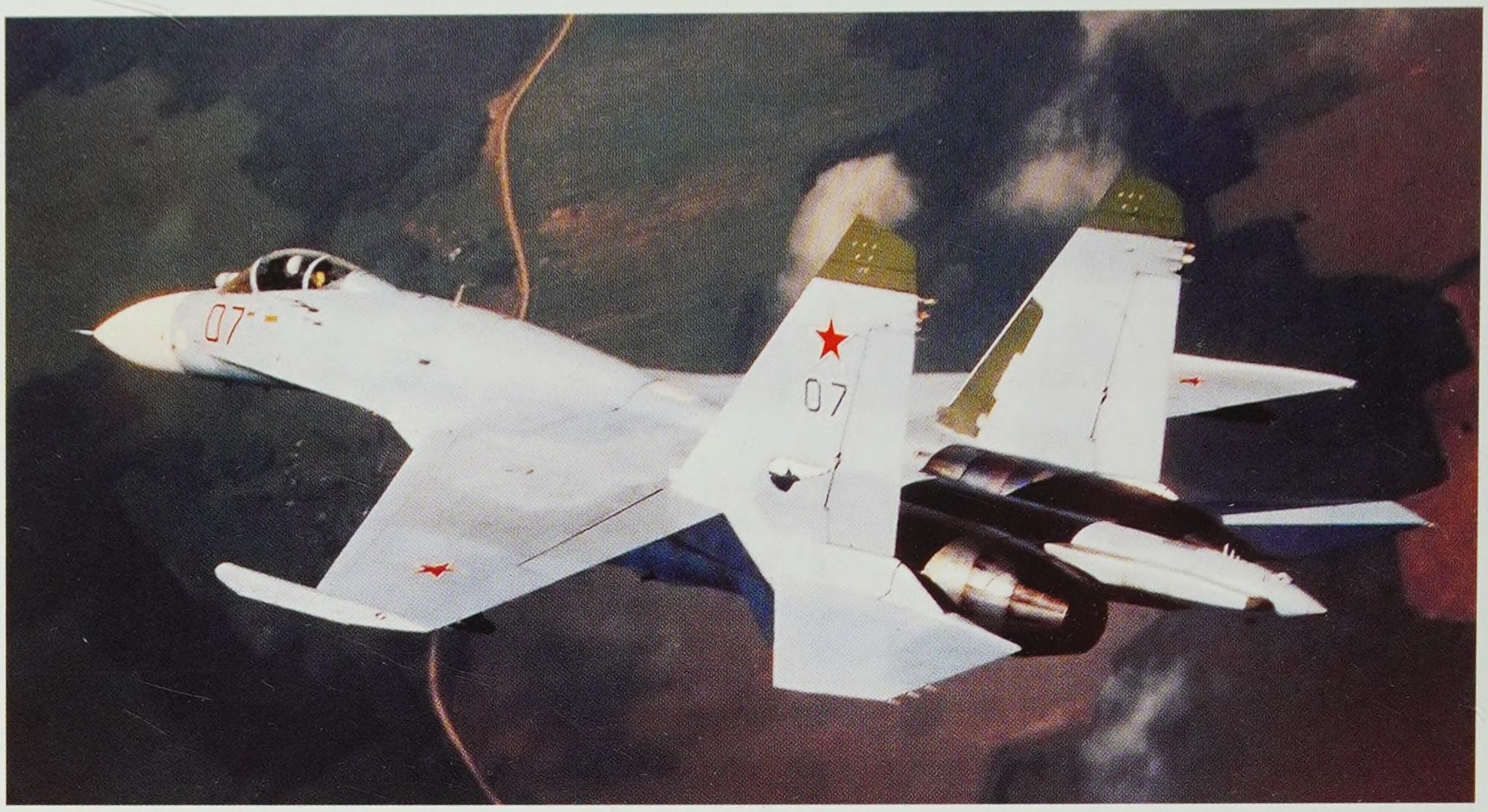
Formation	Location	Notes
5th Air Army	Odessa Military District	
15th Air Army	Baltic Military District	
26th Air Army	Belorussian Military District	
14th Air Army	Siberian Military District	
17th Air Army	Kiev Military District	
24th Air Army of the Supreme High Command	Ukraine & Belorussia	South-Western strategic sector
34th Air Army	Transcaucasian Military District	
73rd Air Army	Central Asian Military District	
76th Air Army	Leningrad Military District	
23rd Air Army	Transbaikalian Military District	
1st Air Army	Far Eastern Military District	
Moscow Military District Air Force	Moscow Military District	The formation had special status
16th Air Army (Western Group of Forces)	East Germany	
4th Air Army (Northern Group of Forces)	Poland	
36th Air Army (Southern Group of Forces)	Hungary	
131st SAD (Central Group of Forces)	Czechoslovakia	

By the early 1980s the Soviet Air Force had a well-established education system for training flight and technical cadre. The introduction of new, more complex aircraft systems made it necessary to alter the personnel training programmes. The flying colleges started giving the cadets more information of an engineering nature and, on graduation, they would receive the Pilot-Engineer grade; the number of specialised aviation engineer colleges training specialists in various areas was increased. As the new generation of combat aircraft was fielded, the Tactical Aviation regiments' organisation changed.

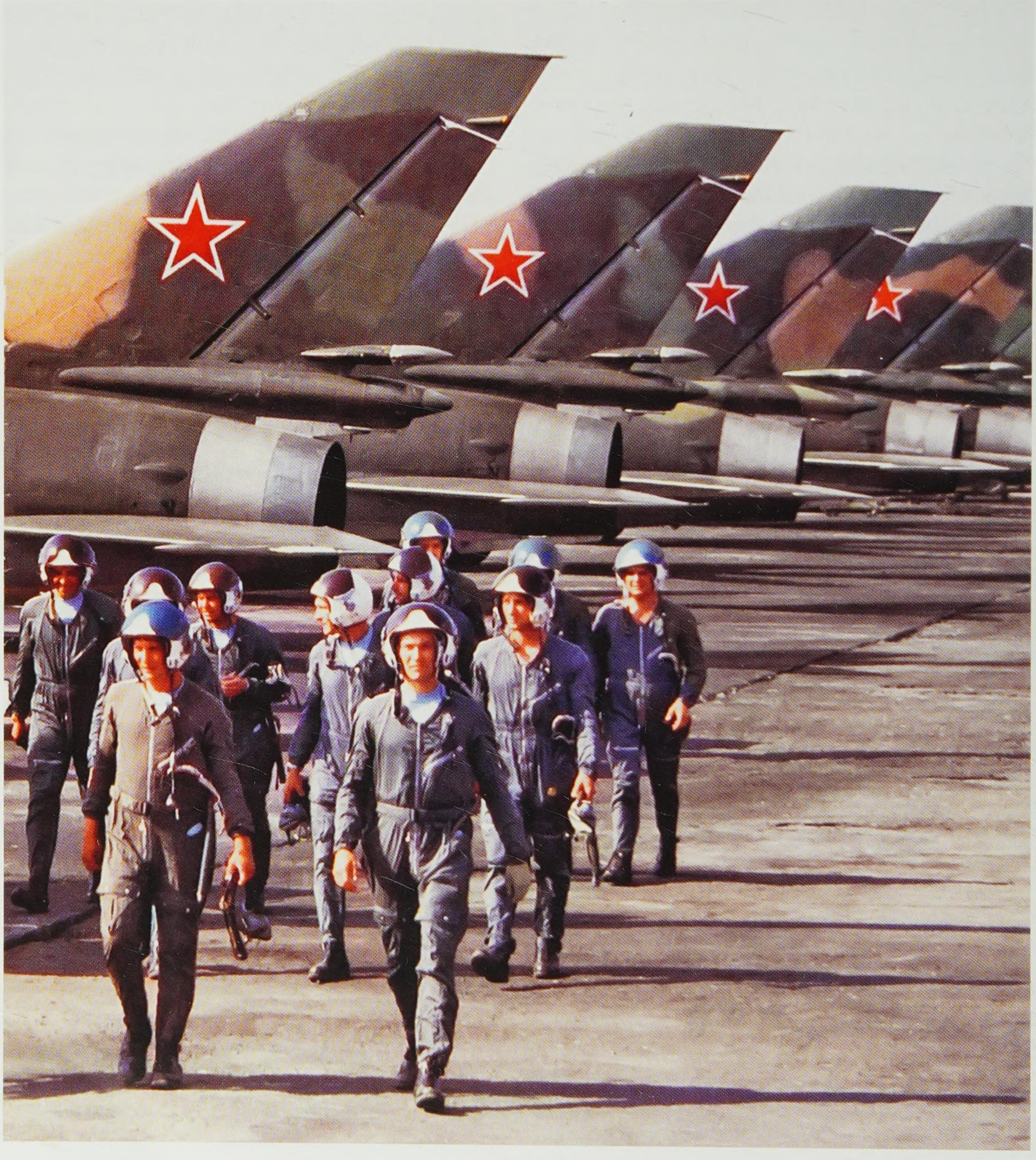
In the 1980s the Tactical Aviation and the Army Aviation operated a broad variety of third- and fourth-generation combat aircraft and helicopters:

- MiG-21SM *Fishbed-J*, MiG-21SMT *Fishbed-K* and MiG-21*bis Fishbed-L* fighters;
- MiG-23M *Flogger-B*, MiG-23ML/MiG-23MLA *Flogger-G* and MiG-23MLD *Flogger-K* fighters and MiG-23UB *Flogger-C* trainers;
- MiG-25RB *Foxbat-B*, MiG-25RBS, MiG-25RBT, MiG-25RBSh and MiG-25RBF reconnaissance/strike aircraft, MiG-25BM *Foxbat-E* SEAD aircraft and MiG-25RU *Foxbat-C* trainers;
- MiG-27 *Flogger-D*, MiG-27M *Flogger-J*, MiG-27D *Flogger-J* and MiG-27K *Flogger-J2* fighter-bombers;
- Su-7BM and Su-7BKL *Fitter-A* fighter-bombers and Su-7U *Moujik* trainers;
- Su-17 *Fitter-C*, Su-17M *Fitter-C*, Su-17M2 *Fitter-D*, Su-17M3 *Fitter-H*, Su-17M4 *Fitter-K* fighter-bombers, Su-17UM *Fitter-E* and Su-17UM3 *Fitter-G* trainers;
- Su-24 *Fencer-A/B/C* and Su-24M *Fencer-D* tactical bombers, Su-24MR *Fencer-E* ELINT aircraft and Su-24MP *Fencer-F* ECM aircraft;
- Su-27S *Flanker-B* fighters and Su-27UB *Flanker-C* trainers;
- MiG-29/*izdeliye* 9.12 (*Fulcrum-A*), MiG-29/*izdeliye* 9.13 (*Fulcrum-C*) fighters and MiG-29UB *Fulcrum-B* trainers;
- An-24B/An-24RV *Coke* airliners (in staff transport configuration), An-24RT *Coke* and An-26 *Curl* tactical transports;
- Mi-8T *Hip-C*, Mi-8TV *Hip-E* and Mi-8MT *Hip-H* transport/assault helicopters, Mi-8PS and Mi-8S *Hip-B* VIP helicopters, Mi-9 *Hip-G* command posts, Mi-8SMV *Hip-J*, Mi-8PPA *Hip-K*, Mi-8MTPI and Mi-8MTSh ECM helicopters;
- Mi-24D *Hind-D*, Mi-24V *Hind-E* and Mi-24P *Hind-F* assault helicopters, Mi-24K *Hind-G* artillery spotter helicopters and Mi-24R *Hind-G2* NBC reconnaissance helicopters;
- An-2TD *Colt* utility/paradrop aircraft and Mi-2 *Hoplite* liaison/training helicopters.

Pilots in full gear pose in front of a Su-17M4R reconnaissance aircraft.



This Su-27 appears to be suffering from an identity crisis. The tactical code is painted on the nose as '07 Red' and on the tails as '07 Blue'.



'Heads and tails': Soviet airmen in G-suits and ZSh-6 helmets walk past a row of parked Su-17M4s. Note the variations in camouflage patterns.

An interesting action shot of two Su-17M4s with differently coloured tactical codes preparing for an afternoon sortie as another pair takes off, belching afterburner flames.

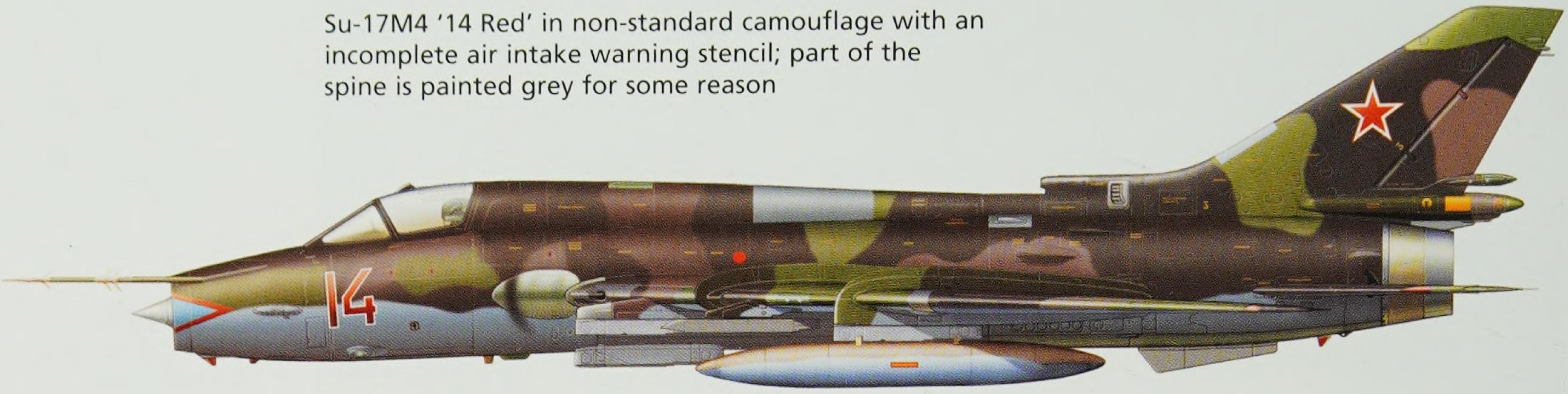
Between 1974 and 1984 the Tactical Aviation established a considerable number of special mission air units. These were independent ECM helicopter squadrons flying Mi-8SMVs and Mi-8PPAs, independent ECM air regiments equipped with Yak-28PPs and Su-24MPs, ground-based ECM units and a highly specialised 'adversary' unit. This unit, known as the 1521st Air Base, was established at Maryy-1 AB in Turkmenia in the early 1970s in the wake of the Arab-Israeli wars and as an answer to the 'aggressor' squadrons of the US Air Force and the US Navy. It was meant to give Tactical Aviation pilots air combat training – an experience as close to the real thing as possible. It emulated the tactics used by the potential adversary, allowing fighter pilots to hone their skills against specific types of NATO aircraft and pass the test for their ability to defend the nation's airspace.

The 1521st Air Base was informally known as the 'aggressor' unit among fighter jocks – even though this name is not to be found in any official Soviet document (the Soviet Union was officially a peace-loving nation, after all!). Maryy was chosen as the home base because it offered favourable weather throughout the year, enabling intensive flying training.

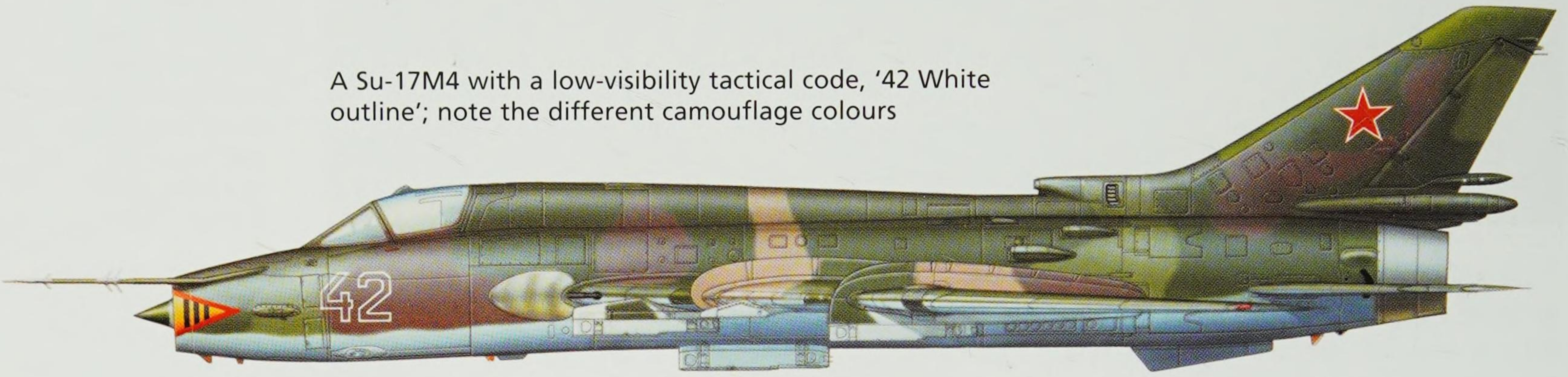
The pilots of the 'aggressor' unit prided themselves on their excellent airmanship, and they were always tough adversaries in mock combat. The two squadrons of the 1521st Air

Two red-coded Soviet Air Force Su-27s contrailing across an expanse of woodland.

Su-17M4 '14 Red' in non-standard camouflage with an incomplete air intake warning stencil; part of the spine is painted grey for some reason



A Su-17M4 with a low-visibility tactical code, '42 White outline'; note the different camouflage colours

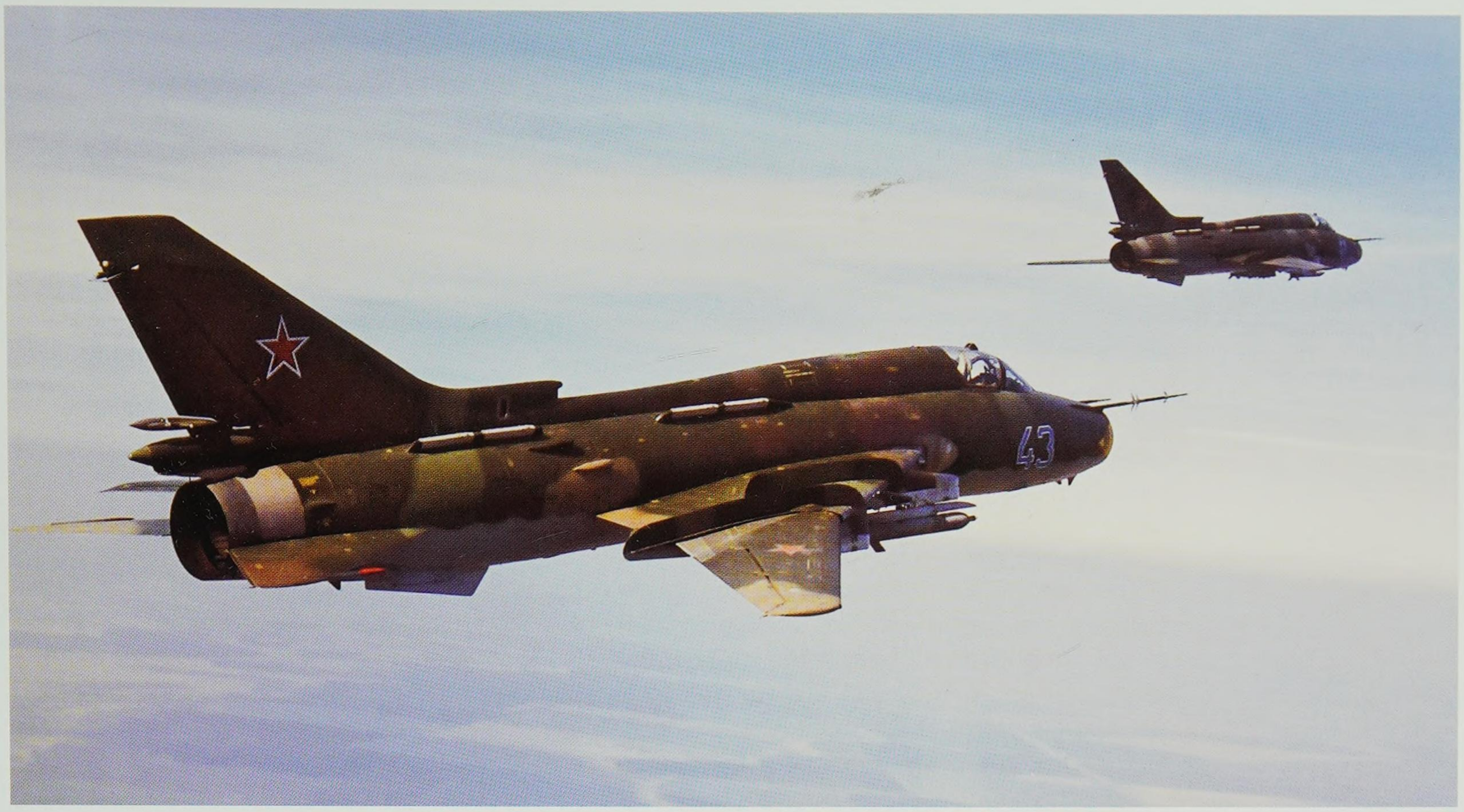


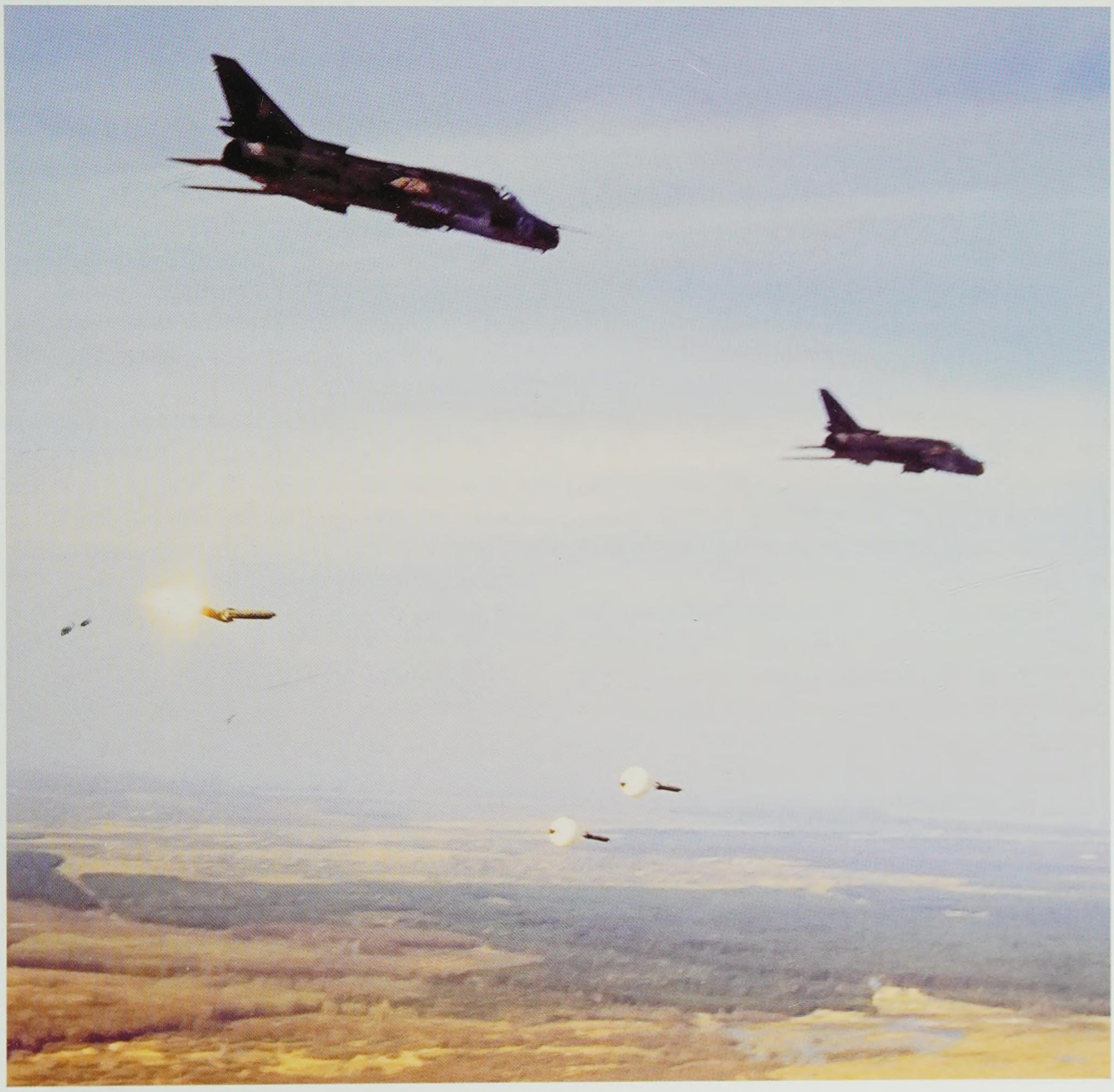
Base were mostly staffed with Pilots 1st Class and Sniper Pilots (official grades reflecting skill); the 'snipers' always made up 35-40% of the lot. Flying two sorties per day, the 'aggressor' pilots had to shoulder a high workload, and before long they no longer cared who they were up against – they were prepared to take on the devil, or a squadron of devils!

Each fighter regiment arriving at Maryy-1 AB for a check-up had to complete the following disciplines:

- evaluation of individual pilots' flying skills, including complex manoeuvres and aerobatics;
- ultra-low-level flying over terrain devoid of natural landmarks (desert areas);
- dogfighting and check-up of the unit's quick-reaction alert (QRA) performance;
- tactical exercises (including the principal fighter missions) performed by the entire regiment and individual squadrons;
- live missile launch and gunnery practice against remote-controlled target drones

Here, Su-17M4 '42 Blue' heads for the target range, loaded with four S-24 heavy unguided rockets on the wing pylons.

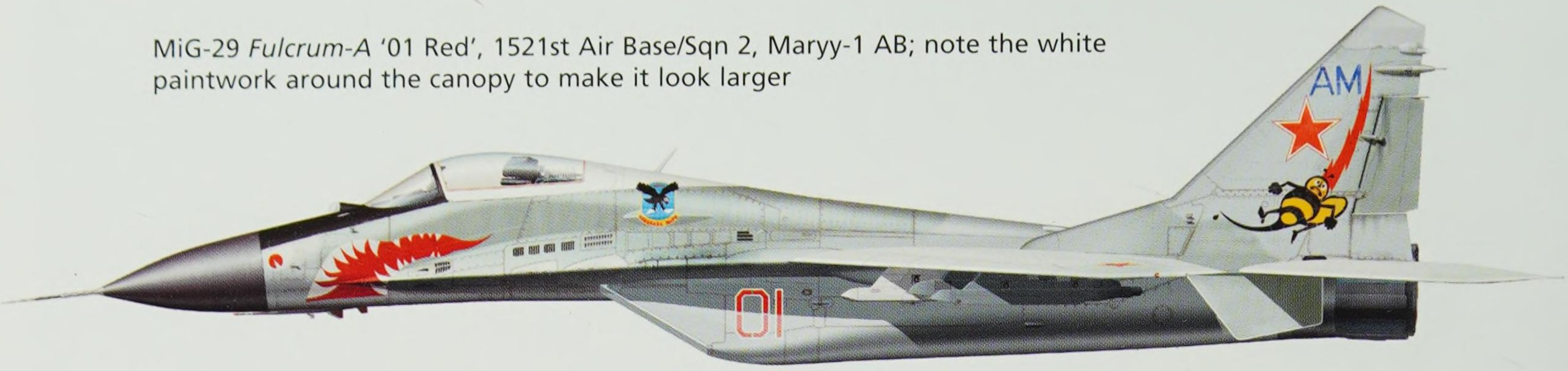


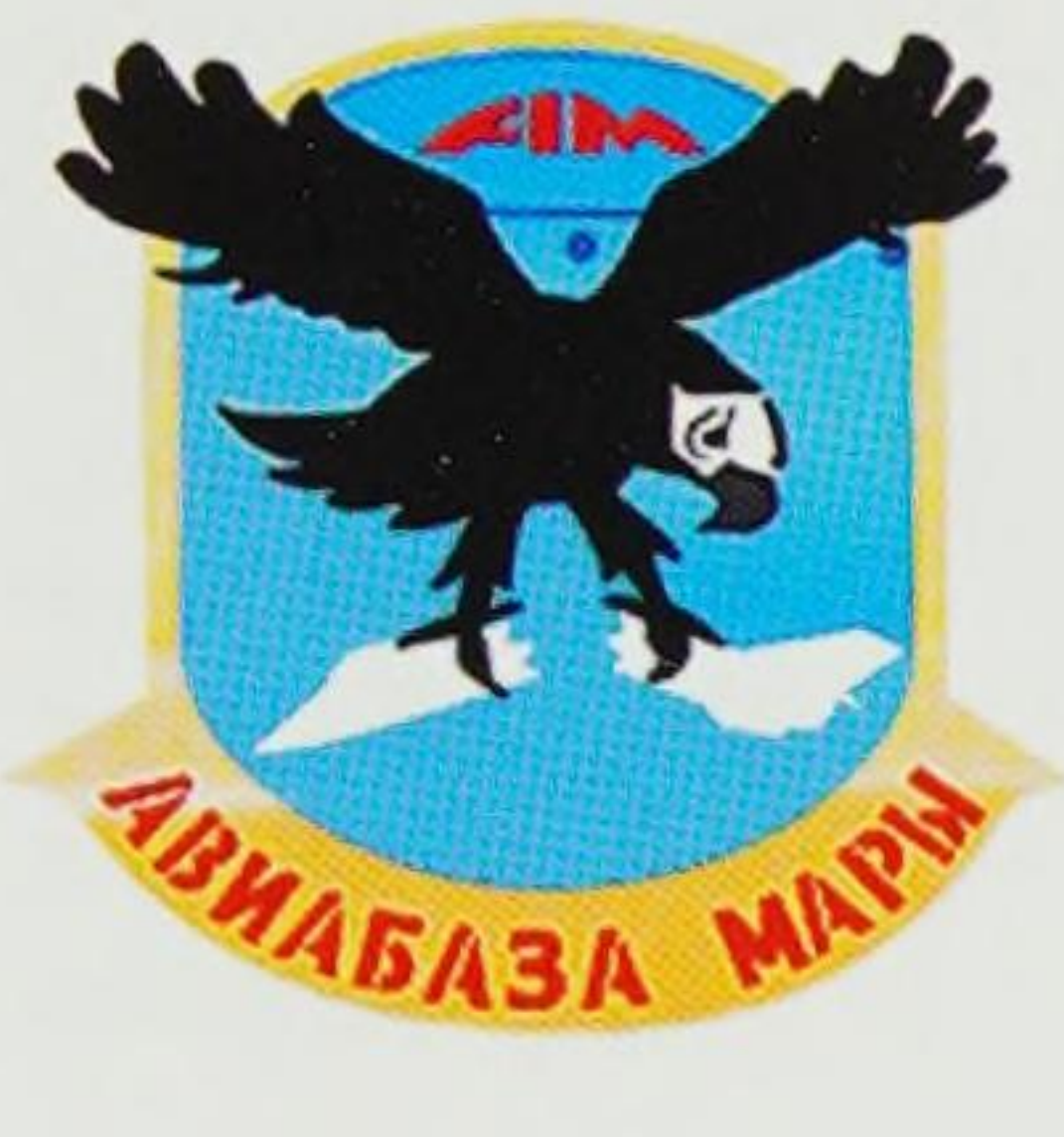


A pair of Su-17M4s ('41 Blue' and '43 Blue'), each carrying a pair of S-24s.

'Bombs away!' The same pair is shown here on a different sortie, dropping two OFAB-500ShN parachute-retarded bombs each. The flight leader's bombs have already deployed their drogue parachutes; one of the wingman's bombs produces a flash as the parachute pops out, expelled by a powder charge.

MiG-29 *Fulcrum-A* '01 Red', 1521st Air Base/Sqn 2, Maryy-1 AB; note the white paintwork around the canopy to make it look larger





The 1521st Air Base badge with the legend '*Aviabaza Maryy*' and an eagle ripping a fighter apart.

manoeuvring in such a way as to emulate a given type of adversary aircraft and in accordance with the current tactical situation.

A typical 'pair versus pair' mock combat session looked like this. Each pair (the 'good guys' and the 'bad guys') had its own combat control radio channel; before the mission the leader of each pair would arrange with his command, control and communications officer to report the position of the other pair to him at certain intervals. The dogfight lasted up to ten minutes. If a pilot managed to latch onto his opponent's tail he would report to his C^3 officer: 'Target in sight!', then activate the radar lock-on mode and switch his radio to the opponent's frequency, informing him: 'I see you! You're under attack!' Unless the other pilot could shake off the pursuer immediately, the dogfight was discontinued because it was an obvious 'kill'.

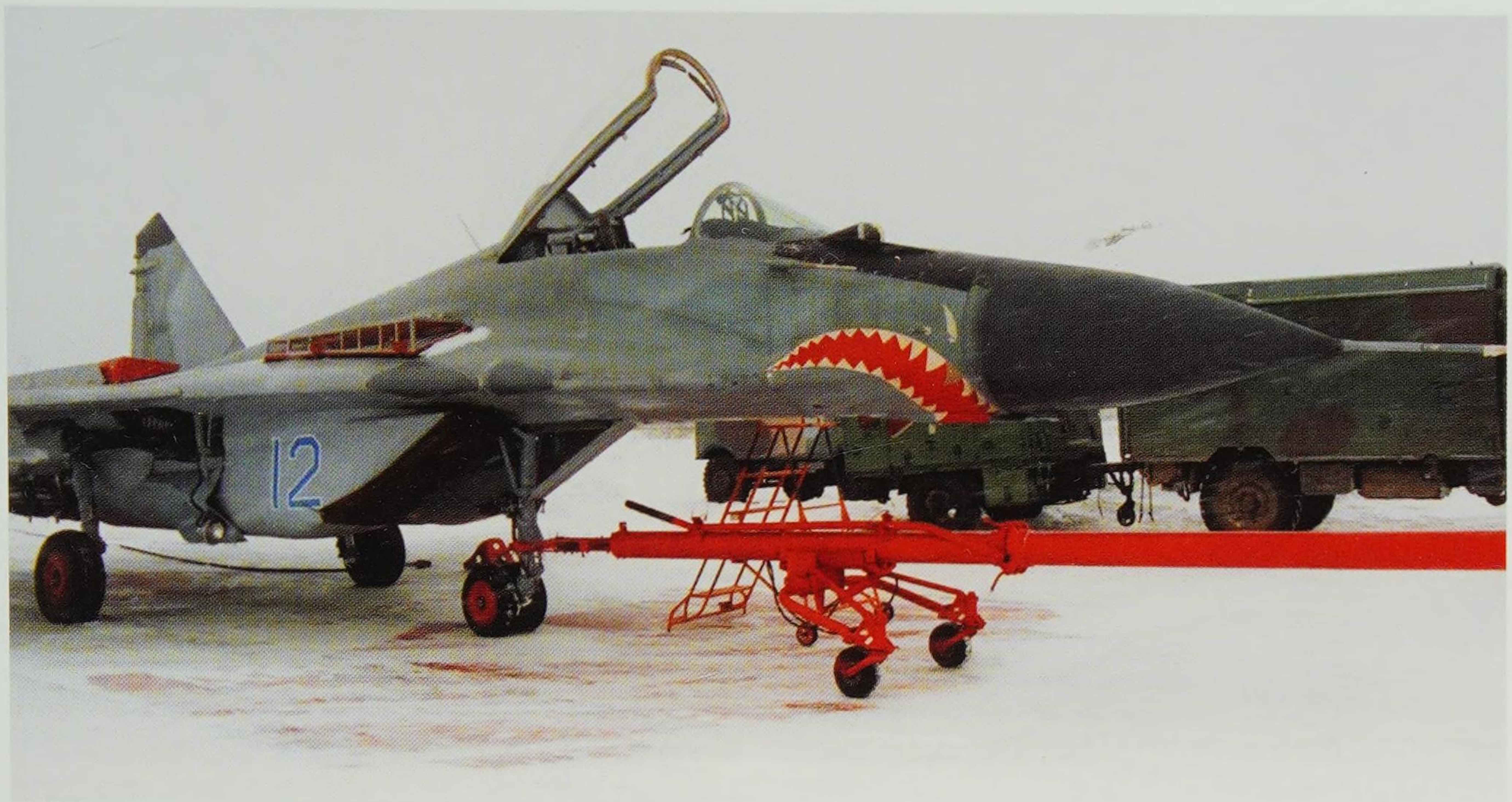
The date of the checkout session at the 1521st Air Base was set individually for each regiment at the beginning of the practice year. As the day drew near, the entire regiment's resources were committed to the preparation for 'the Maryy experience'. The unit could ill afford to fail the test because the results reflected the unit's training and combat readiness level, and getting an A in the course was not easy at all.

In 1989 the 1521st Air Base's Squadron 1st began re-equipping from MiG-21*bis* fighters to MiG-29 *Fulcrum-Cs*. The fighters were delivered in the standard greenish grey/neutral grey camouflage scheme. This created a problem: in a group dogfight the pilots had difficulties identifying friend from foe, especially if they were flying the same type of aircraft. Hence the idea of applying quick-identification markings to the 'aggressor' aircraft arose at the 'grass roots' level; the commanders thought over the initiative and approved it. Soon the resident MiG-29s at Maryy received special markings. However, this was by no means a 'flight of fancy' matter – indeed, a scientific approach was used! Some MiG-29s were painted up to make them resemble the McDonnell Douglas F-15 Eagle – the wingtips and stabilator tips were painted yellow with a black outline; this visually altered their shape, making them appear to be raked, as on the F-15. Angled black stripes converging in a black and yellow chevron were applied aft of the cockpit, making the canopy appear longer and more similar to that of the Eagle.

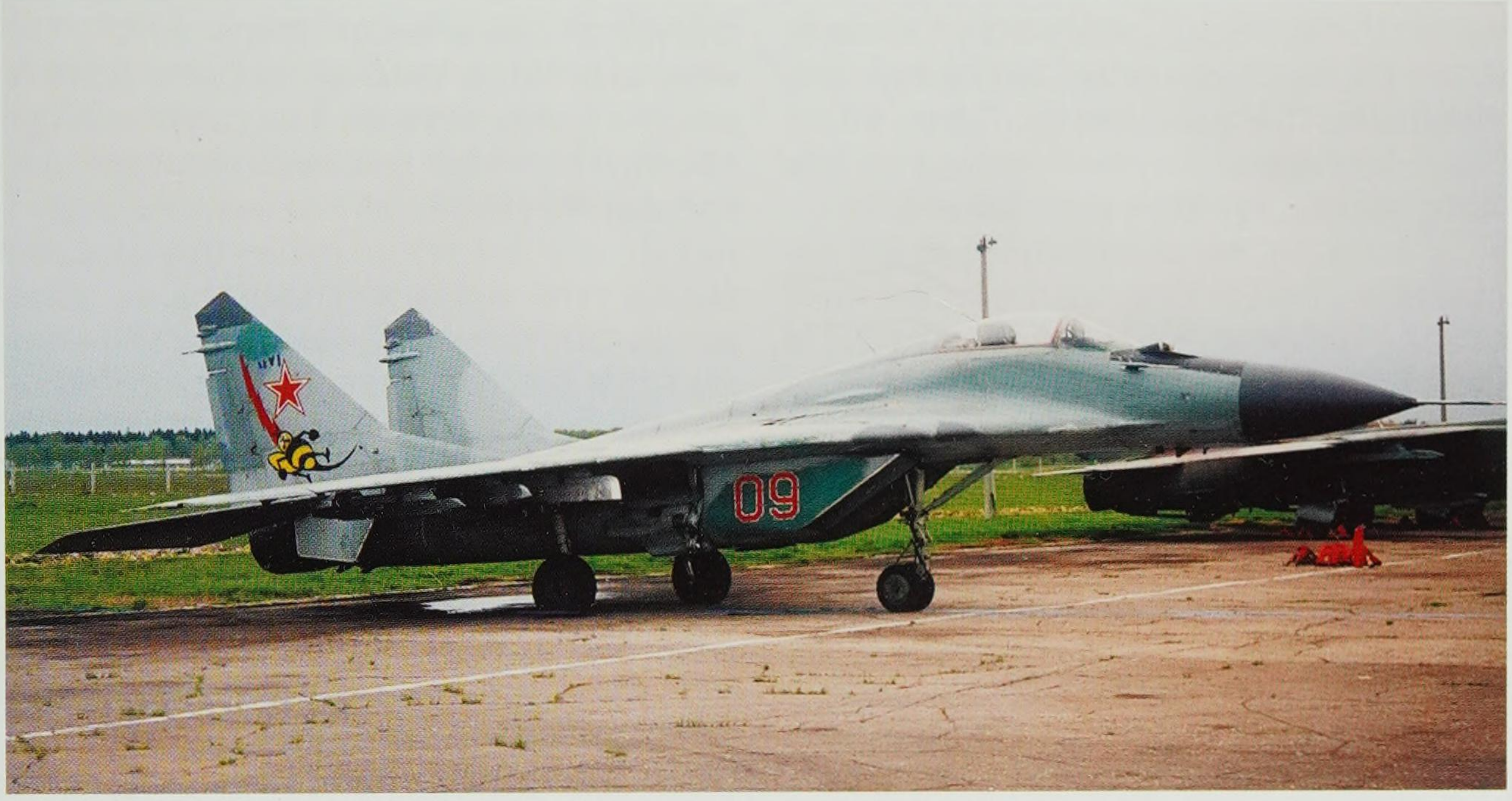
Nose art was also applied (as an exception, since the aircraft were supposed to represent NATO fighters); this was left up to the technicians, and each aircraft had a slightly different version. One aircraft coded '31 Red' was arguably the most colourful MiG-29 at Maryy. In addition to the 'F-15 disguise' it sported a sharkmouth, a so-called 'brandy stripe' (a yellow identification stripe with stars similar to those found on brandy bottles) on the centre fuselage and the legend *Avia**ba**za Ma**ryy*** aft of the cockpit, while the fins were adorned with the badge of Sqn 1 (a winged '1' superimposed on a red arrow) and a sabre-toothed tiger.

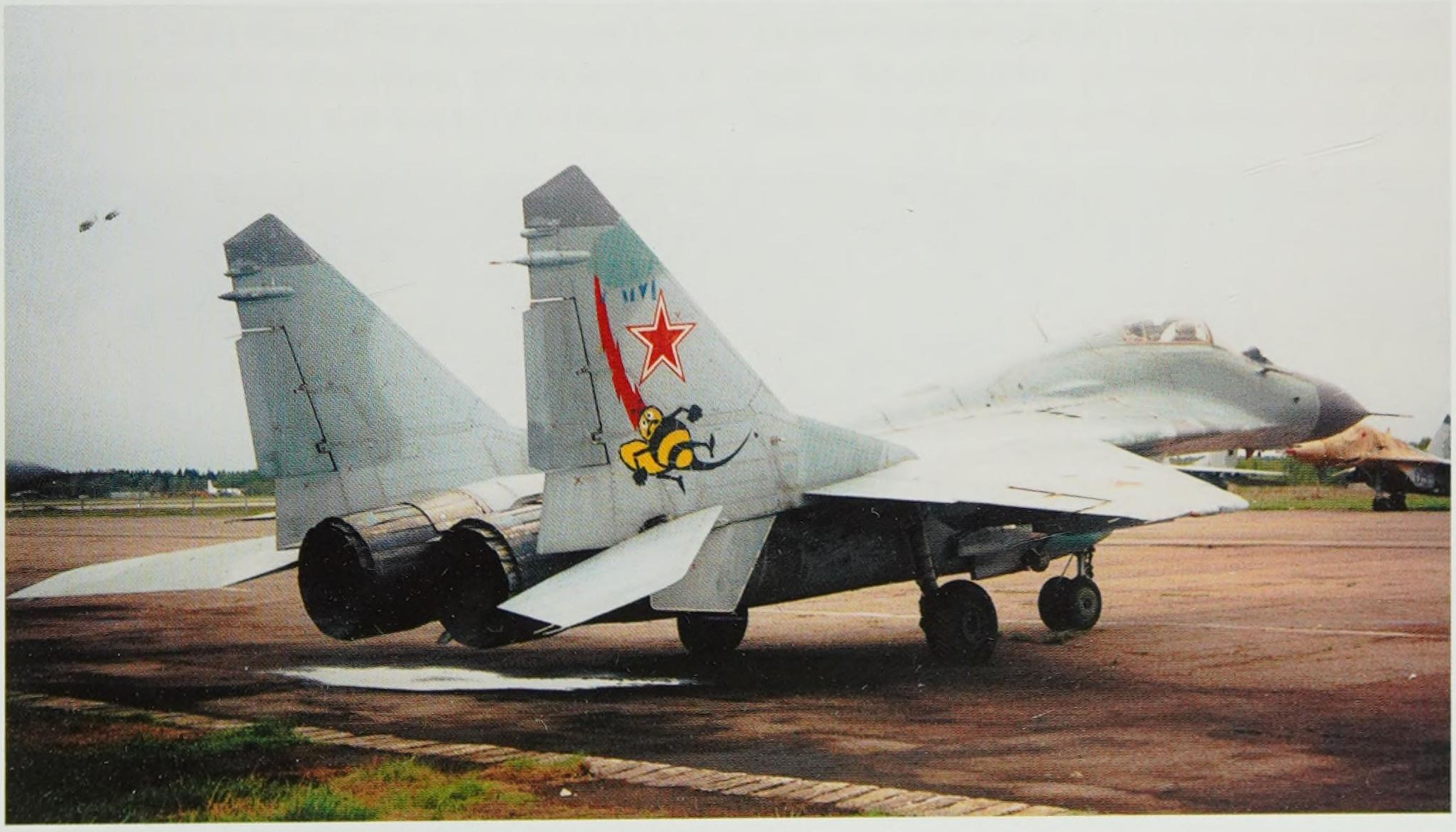
'31 Red' was meant to be a sort of pattern aircraft for the 'aggressors'; however, for various reasons not all of the unit's MiGs were painted up in this fashion. For instance, '21 Red' had no 'brandy stripe'. Seven other *Fulcrum-Cs* lacked the tiger motif; instead, '30 Red' sported a leaping leopard below the canopy.

The unit's Sqn 2 flew MiG-23MLDs. Originally it was to re-equip with Su-27s but there was a last-minute change of plans, and the squadron began receiving high-time early-production *Fulcrum-As* from all across the nation. These, too, received special markings to assist visual differentiation in a dogfight; a few weeks after arrival the newcomers were recoded in an orderly fashion and adorned with artwork. The most colourful ones wore a large sharkmouth (with a lusty grin) and a white triangle on the upper fuselage extending aft from the cockpit; this incorporated the

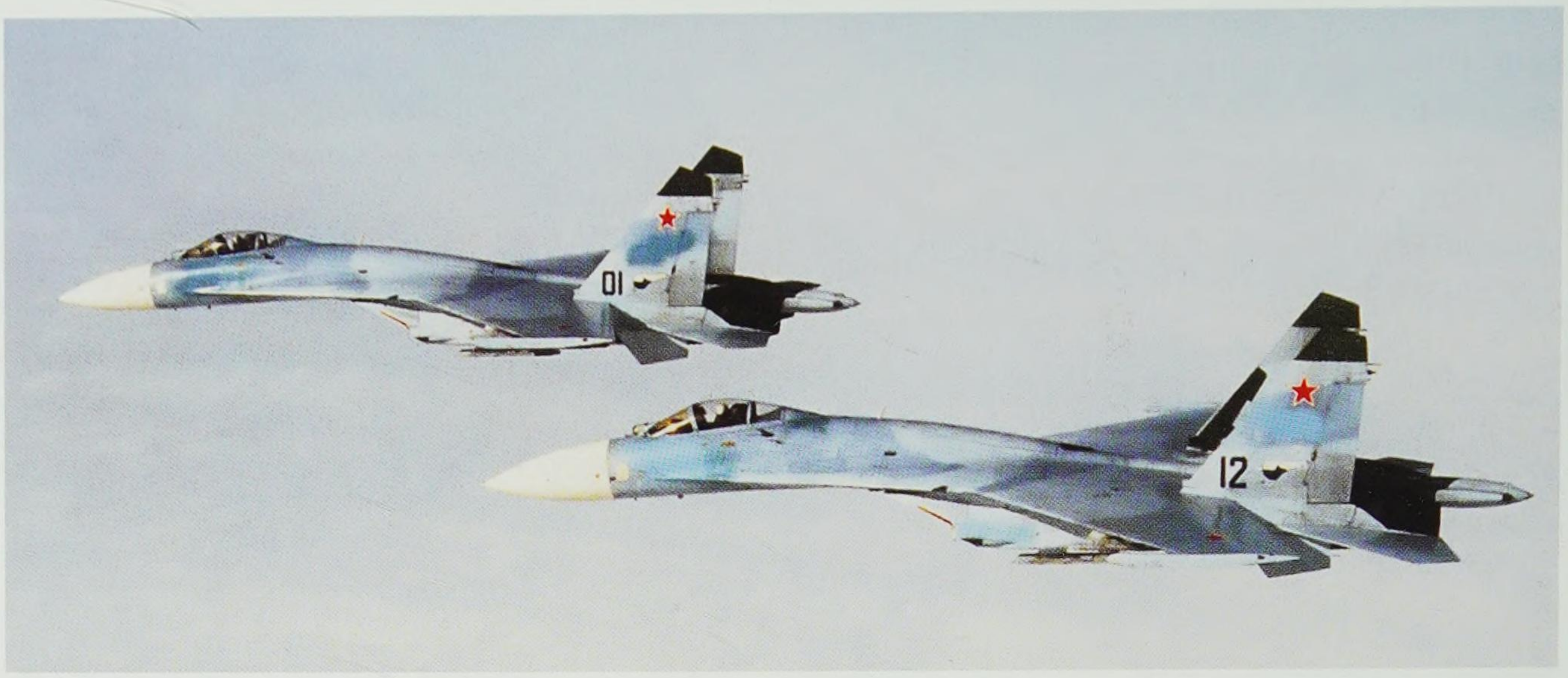


A sharkmouthed MiG-29 awaits overhaul at ARZ No.121. The blue tactical code suggests this is not one of the 'aggressor' aircraft from Maryy; the 1521st Air Base's aircraft were red-coded.





Seen at Kubinka AB during overhaul at ARZ No.121, '09 Red', an early MiG-29 *Fulcrum-A* with ventral fins belonging to the 1521st Air Base/ Sqn 2, carried this hornet motif. Note the nose gear doors modified to late production standard.



Two Su-27s from Kubinka display the style and position of the tactical codes characteristic of 234th GvIAP aircraft. The codes were worn like this (on the tails only) for a brief period.

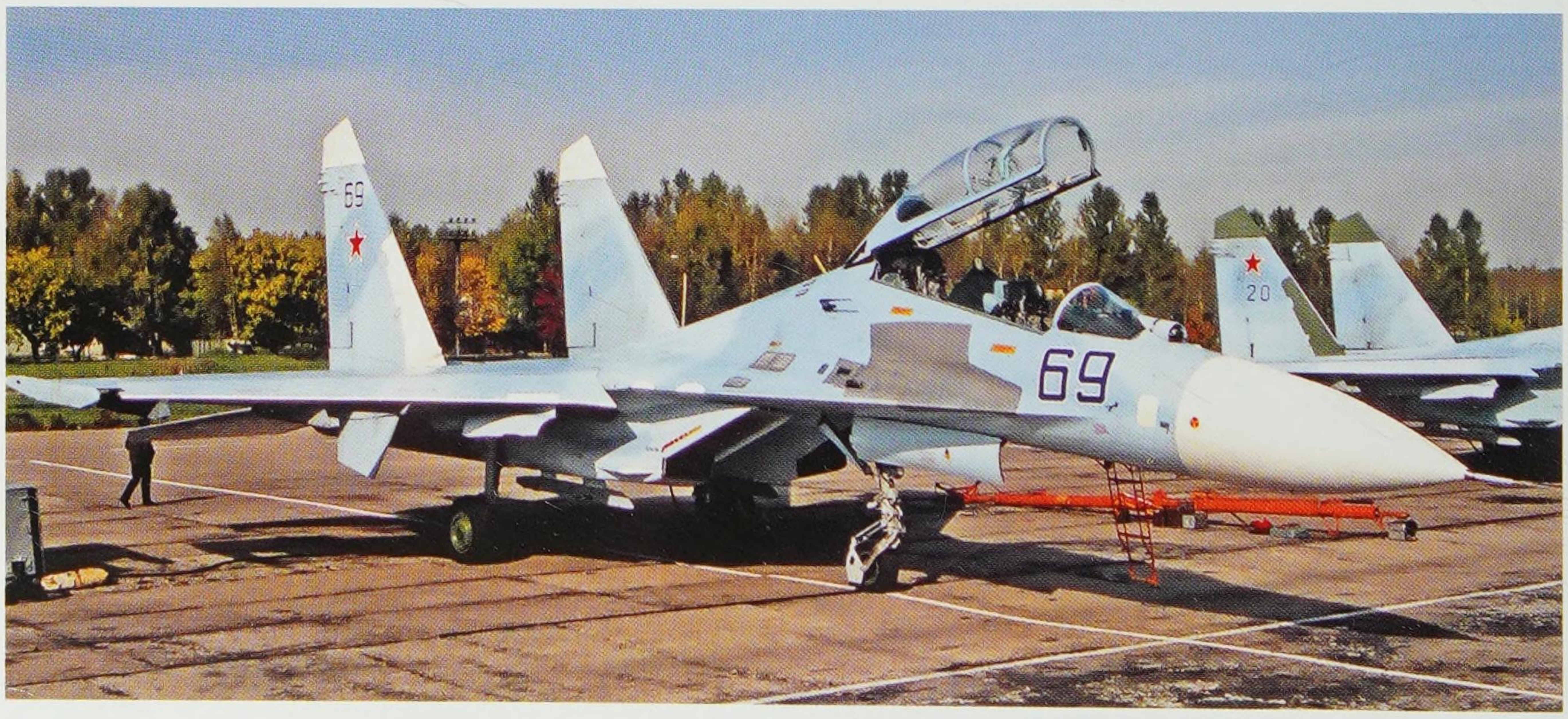
base's crest (a shield with an eagle breaking an aircraft in two) on both sides. The outer faces of the fins carried the squadron badge – a hornet superimposed on a red lightning bolt – and the letters 'AM' (for *Aviabaza Maryy*) above it. When the unit came under Turkmenian jurisdiction after the demise of the Soviet Union, the letters were removed because in the Turkmen language *am* is an obscene word.

In the USSR, the MiG-29 equipped ten regiments in the European part of the nation totalling some 350 aircraft. Two-thirds of these units were stationed outside the Russian Federation. Here, we should by all means mention the 168th IAP of the 24th VA based at Starokonstantinov (Khmel'nitskiy Region) and the 92nd IAP of the 14th VA based at Mookachovo (Transcarpathian Region), both in the Ukraine. In the late 1980s/early 1990s these units took delivery of 36 and 39 *Fulcrum-Cs* respectively.

Almost concurrently, in 1988, the 642nd GvAPIB of the 5th VA stationed at Martynovka AB near the town of Voznesensk (Kirovograd Region, the Ukraine) re-equipped with MiG-29s, becoming the first fighter-bomber unit to do so. Established in 1940, the regiment had been a strike unit throughout its history, and its last mounts had been MiG-27 fighter-bombers. The 642nd GvAPIB did not change its specialisation and the *Fulcrums* were used in the uncommon fighter-bomber role, the typical ordnance load comprised four 500-kg (1,102-lb) FAB-500ShN parachute-retarded HE bombs, S-24 heavy unguided rockets and S-8 FFARs rather that air-to-air missiles. The reason was that the Air Force anticipated the service entry of the multi-role MiG-29M *Fulcrum-E* armed with guided air-to-surface weapons in the mid-1990s (which, unfortunately, never materialised). Being an air superiority fighter, the basic MiG-29 was far less efficient in the strike role than the older but purpose-built MiG-27 and Su-17 (especially the latest MiG-27K and Su-17M4).

Because of the 642nd GvAPIB's specialisation all 37 MiG-29s were delivered in a dark green/dark earth/tan camouflage instead of the usual two-tone grey scheme. Not all of the unit's aircraft wore the Guards badge.

In 1990 the regiment briefly deployed to Tiraspol' in Moldavia but returned home just



'69 Blue', an early-production Su-27UB operated by the 234th GvIAP, on the flight line at Kubinka AB.

As this photo shows, the MiG-25BM was able to carry a drop tank. The SEAD version's colour scheme included a distinctive dark grey nose.

in time to avoid being embroiled in a civil war when the republic's Transdniestrian region declared independence. When the Ukraine became a sovereign state after the demise of the Soviet Union and the Fighter-Bomber Aviation was disestablished as being contrary to the nation's official non-aggressive policy, the regiment became a fighter unit as the 642nd GvIAP – but that's another story which lies outside the scope of this book.

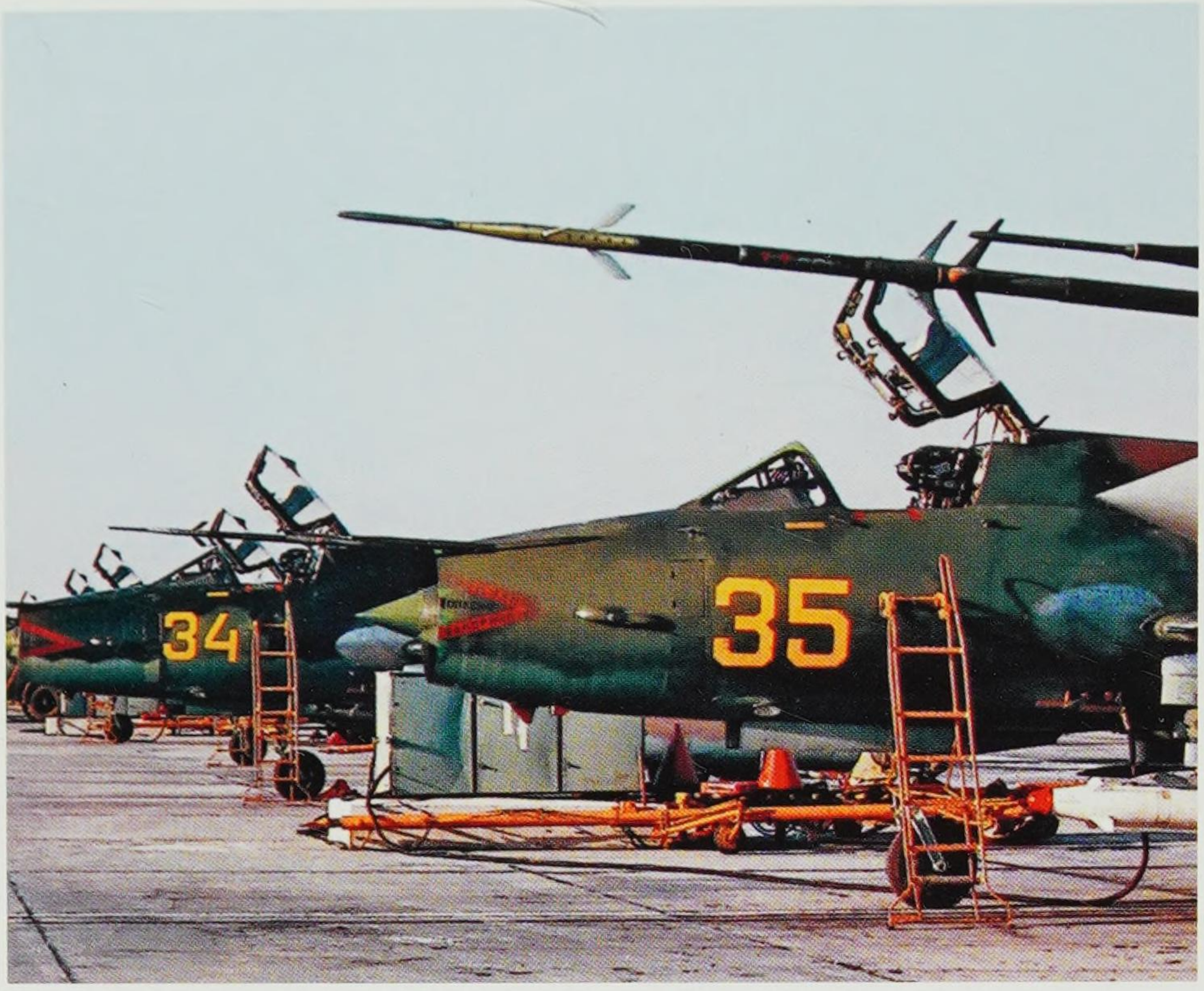
In Belorussia, the 26th VA's 927th *Kenigs***berg***skiy* APIB (thus named for its role in taking Königsberg, which later became the Russian city of Kaliningrad) based at Beryoza-Karpusskaya AB re-equipped with the MiG-29 in 1990, operating 51 aircraft.

In Kazakhstan, Loogovaya AB was home to the 715th UAP (*oo***cheb***nyy* ***avia*****polk** – Training Air Regiment) which had been mainly tasked with conversion training of pilots from 'friendly nations'. This later became the 715th Air Base of the Kazakhstan Air Force, retaining 14 MiG-29s (early-production *Fulcrum-As* and a few MiG-29UBs).

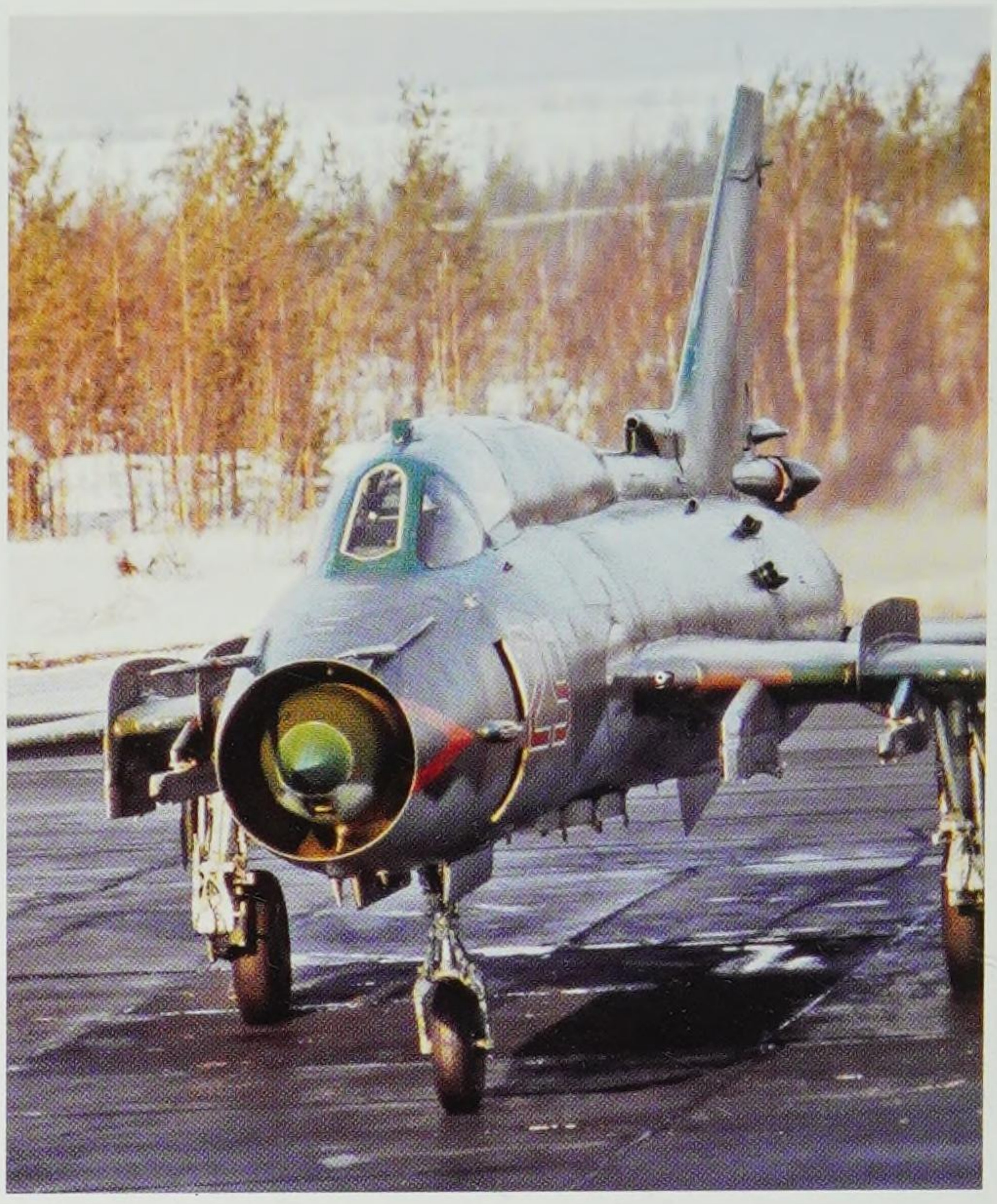
Next door, in Uzbekistan, Kokaïdy AB near Karshi hosted the 115th GvIAP, a famous unit which had earned glory in the Great Patriotic War. The regiment re-equipped from the MiG-21 to the MiG-29, and most of the *Fulcrums* were delivered in the rarely seen three-tone tactical camouflage which proved very appropriate in those parts. All 37 single-seaters and the three MiG-29UB trainers (the standard complement of a regular MiG-29 unit) were delivered with red tactical codes and the Guards emblem already applied by the factories. Later the aircraft of Sqn 3 ('24', '26', '41' through '52' and '54') gained the legend *Mosk***va** (Moscow) inherited from the unit's MiG-21s.

The close proximity of the 'hot' Afghan border and the likelihood of incursions gave the pilots of the 115th GvIAP plenty of opportunities and motivation to hone their skill. The airmen, who were very interested in transitioning to more advanced aircraft, soon realised the strong points of the new fighter to the full. The most obvious difference from the 'balalaika' (as the delta-wing MiG-21 was dubbed because of its distinctive planform) was the MiG-29's enormous thrust/weight ratio and excellent rate of climb in full after-

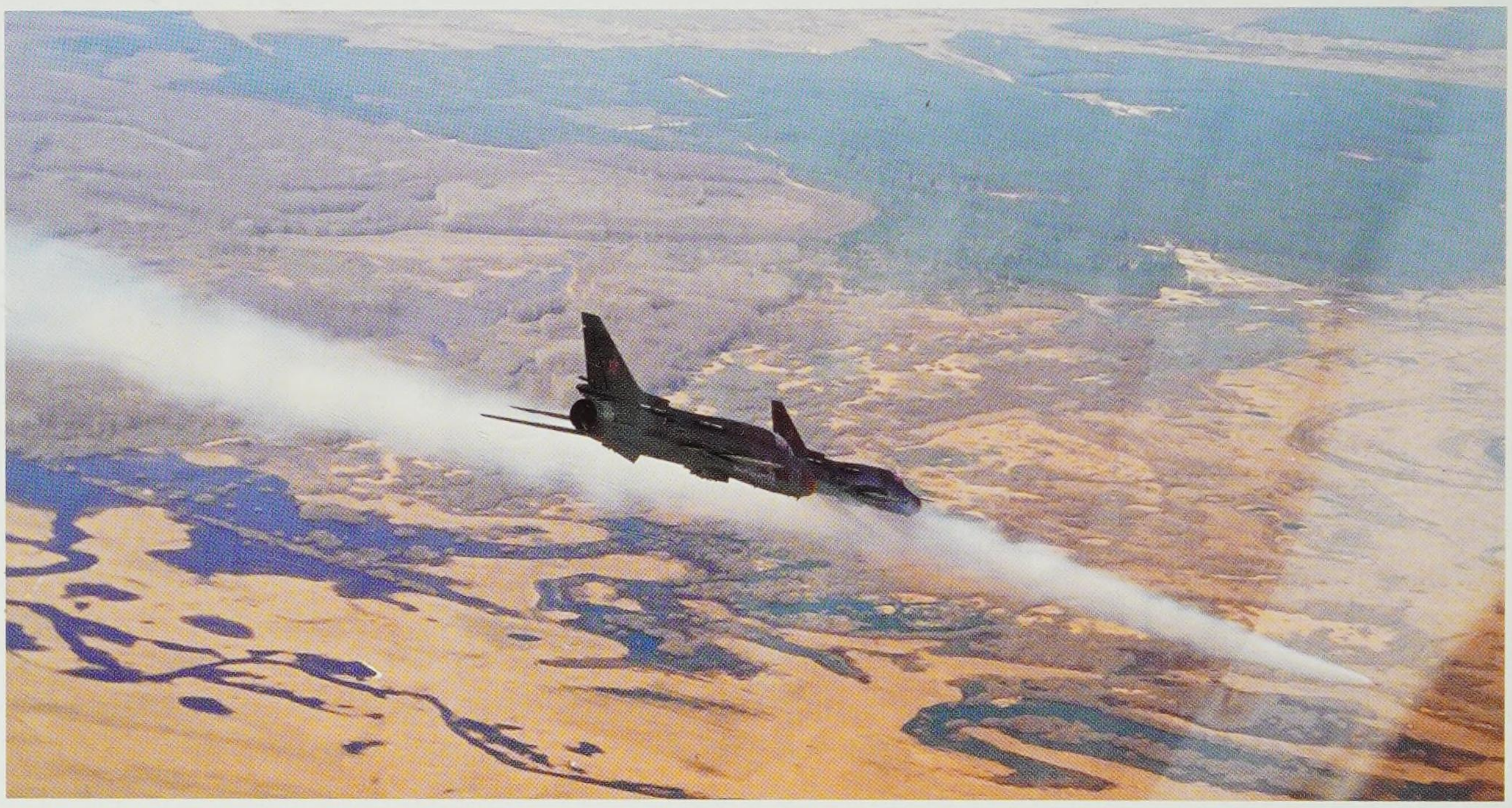
'43 White', another MiG-25BM on a training sortie; no missiles are carried. This particular aircraft later served on with the Russian Air Force.



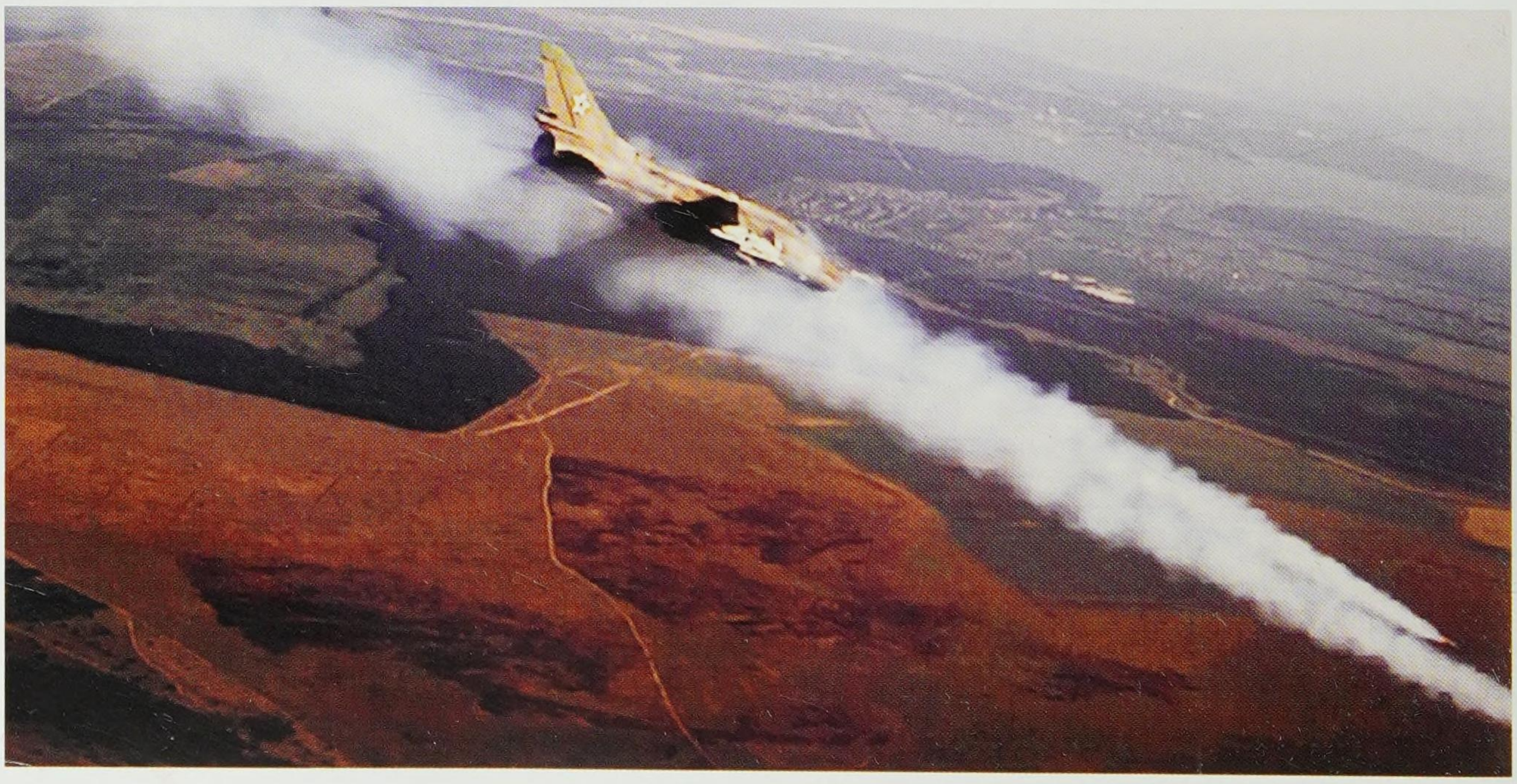
Su-17M4s on a flight line with centralised power supply. The white dielectric nosecone on the nearest one is definitely non-standard.



Su-17M4 '29 Red' returns to base after a sortie. Note the windshield frame touched up in bright green; such repairs of worn paintwork with whatever colour was available were fairly common.



A pair of Su-17M4s dives onto the target and the leader lets loose with a rocket salvo; the wingman has already expended his rockets.



Here, Su-17M4 '42 Blue' shown on page 322 fires a pair of rockets. The S-24 leaves quite a heavy smoke trail.

burner; the new fighter was an avid flyer. (It should be noted, however, that on training sorties it was standard operational procedure to take off at full military power instead of full afterburner in order to save fuel and conserve engine life.)

Air combat manoeuvring and live weapons training figured strongly in the training programme. This is where the statically unstable MiG-29 with a blended wing/body layout really came into its own. A major weakness of the Soviet second- generation and even third-generation fighters was the limited ammunition supply for the cannon(s). True, the MiG-29's GSh-301 cannon had an ammunition supply of just 150 rounds; however, the jet had an advanced gunsight which minimised the expenditure of ammunition and increased the 'kill' probability. Two main gunfire modes were possible – 70-80 rounds and 100 rounds (two-thirds of the total supply). There was also a practice mode in which bursts of seven to nine rounds were fired; experience showed this was enough to destroy a manoeuvring target drone.

Even though the Soviet Tactical Aviation flourished in the mid-1980s, much of its strength was later lost due to the political and economic turmoil into which the country later plunged. The *perestroika* (restructuring) policy launched by the new Soviet leader Mikhail S. Gorbachov in 1985 had a negative effect on the Soviet Armed Forces, including the Air Force. Accident attrition increased, including cases when military aircraft crashed in built-up areas next to the airfields where they were based. About the same time a politically motivated decision was taken to reduce the FA's fleet by some 800 aircraft; some of them were transferred to the Navy in an effort to save them from the breaker's torch. That was probably when the Soviet political top brass got the 'brilliant' idea of phasing out all single-engined combat aircraft – a decision which wreaked untold havoc with the Tactical Aviation. The decision was taken 'upstairs' (by the Communist Party Central Committee) and was largely an ostentatious move: 'look, we're peace-loving people and we're making arms reductions'; the protests of the General Staff and the Air Force Main HQ fell on deaf ears. As a result of this myopic policy, the Air Force lost its entire fighter-bomber arm, nearly all of the tactical reconnaissance aircraft and a good-sized part of the tactical fighter fleet. The Army Aviation, too, lost nearly all of its reconnaissance drones, which were also single-engined. To quote a famous phrase: *c'est*

This MiG-29 coded '22 Red' wears a transverse white stripe for quick identification during war games.

A 234th GvIAP MiG-29 coded '54 Blue' flies above the Russian countryside near Moscow.

A Su-24M armed with S-24 rockets on the outer wing pylons. The wingss are at an intermediate setting.

plus qu'un crime, c'est une faute (it's worse than a crime: it's a blunder).

By a twist of fate the Tactical Aviation's most experienced and battle-hardened units that had been to hell and back in Afghanistan were the first to be axed – exactly because they were mostly flying single-engined types (the MiG-21, MiG-23/MiG-27 and Su-17) which were now deemed obsolete and 'dangerous to operate'. After their retirement, the Soviet Air Force had nothing to bridge the gap between the relatively cheap Su-25 twin-engined light attack aircraft and the outrageously expensive Su-24 tactical bomber, which could carry precision-guided munitions and perform navigational bombing, using the target's co-ordinates. By the day's standards the Su-17M4 and the MiG-27K were still quite up-to-date aircraft that had been in service for quite a short period. They had been manufactured in the 1980s and still had plenty of airframe life remaining; in fact, many aircraft had not even logged enough hours to be due for their first major overhaul. As a result, the FA was left only with the Su-24 whose numbers were clearly excessive in relation to the other tactical aircraft types. As mentioned earlier, the tactical bomber aviation was the principal asset of the main HQ at a given theatre of operations and of the fronts' commanders. Its primary mission was the destruction of troop concentrations and key objectives. Using the *Fencer* for this was irrational, to say the least, since the Su-24 had been designed with somewhat different roles in mind.

The early retirement of the Su-17 left the Su-24MR as one of the Tactical Aviation's two main reconnaissance types.

The reduction of the number of reconnaissance aircraft types and the overall recce fleet strength was another factor that seriously hampered the operations of the Tactical Aviation. The lightweight and relatively cheap Su-17M3R and Su-17M4R were capable of flying reconnaissance missions around the clock along the forward line of own troops and in the enemy's tactical area. Being reconnaissance versions of fighter-bombers, they were fully capable strike aircraft if no camera/ELINT pod was fitted; the Su-17M3R/Su-17M4R pilots' combat training course included bombing, and on the Afghan TO they had habitually flown reconnaissance/strike missions. With the *Fitter-H/K* gone, the Tactical Aviation's sole reconnaissance assets were the MiG-25RB *et seq*. and the Su-24MR; these heavy aircraft were designed for operations in the enemy's far tactical and theatre areas, not over the frontlines. Using the *Foxbat-B/D* and *Fencer-E* over the battlefield was not only irrational; because of the complex mission equipment they took a lot longer to prepare for a mission than the Su-17M3R/Su-17M4R.

The tactical fighter aviation was hard hit as well. The premature retirement of the MiG-23 reduced the range to which tactical nukes could be delivered, since the MiG-29 was rather 'short-legged'. In fact, service pilots sometimes mockingly called the *Fulcrum* a fighter intended for gaining air superiority over the base's inner marker beacon. The heavier Su-27 had adequate range but, again, it was an air superiority fighter not intended for strike missions – especially nuclear strike.

In the late 1980s, when the Soviet Union was suffering from an economic downturn and defence spending was slashed, the proportion of aircraft and helicopters equipped with state-of-the-art ECM systems for self-protection fell dramatically. So did the number of specialised ECM units; more than 50% of the Tactical Aviation's independent ECM helicopter squadrons and ground units were disbanded, as were many independent ECM air regiments.

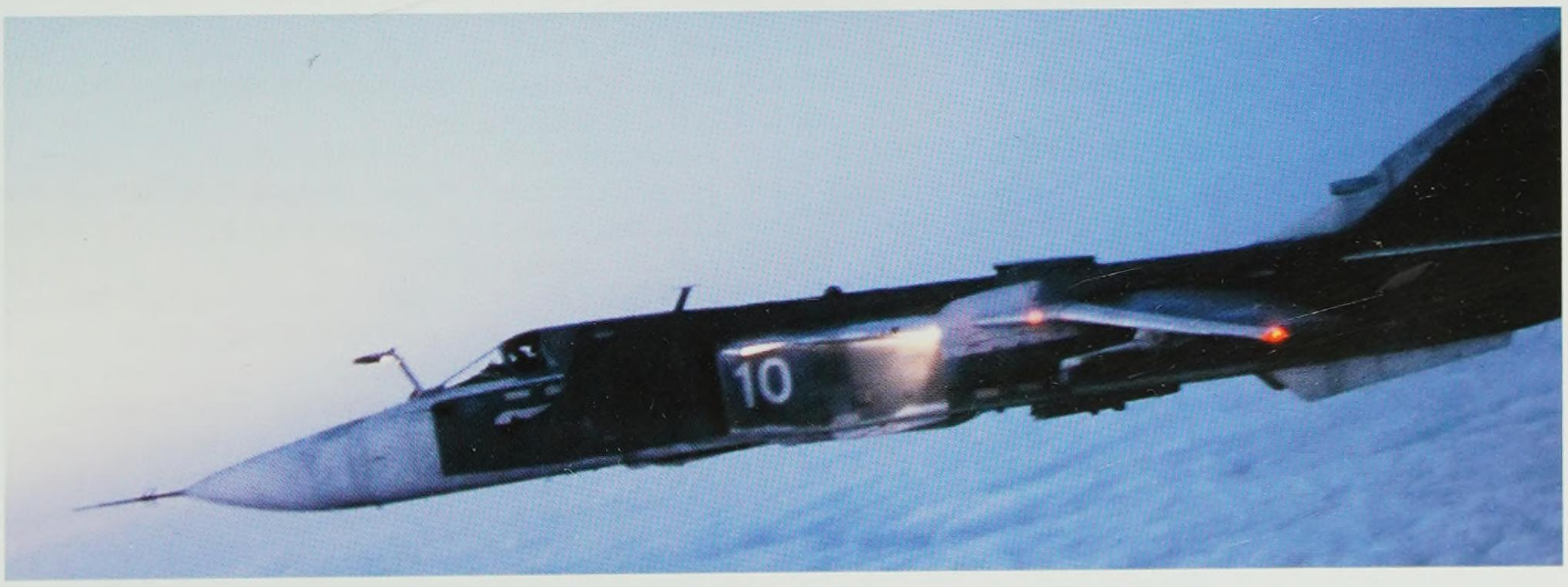
Thus, by the end of the decade huge numbers of Tactical Aviation aircraft had been relegated to storage depots. Even so, they could have been saved, but in the political and economic chaos of the late 1980s/early 1990s no funding was allocated for the proper conservation and maintenance of these aircraft. As a result, in a few years many of them had deteriorated to such an extent that they were only good for the smelter.

Still, at the time of the Soviet Union's demise the Soviet Air Force and Air Defence Force was the world's largest air arm, surpassing the USAF and the People's Liberation Army Air Force (PLAAF) of China in terms of sheer numbers. It included 20 air armies, 38 air divisions and 211 air regiments operating a total of 10,000-plus aircraft, including 5,600 combat aircraft. Additionally, the Army Aviation (then under the control of the ground forces) had about 5,000 transport and combat helicopters. No nation in the world except the USA had comparable air power. The Soviet Tactical Aviation was capable of taking on the potential adversary (read: NATO) in the fight for air superiority both on the European TO (aided by the Warsaw Pact allies) and in the Far East.

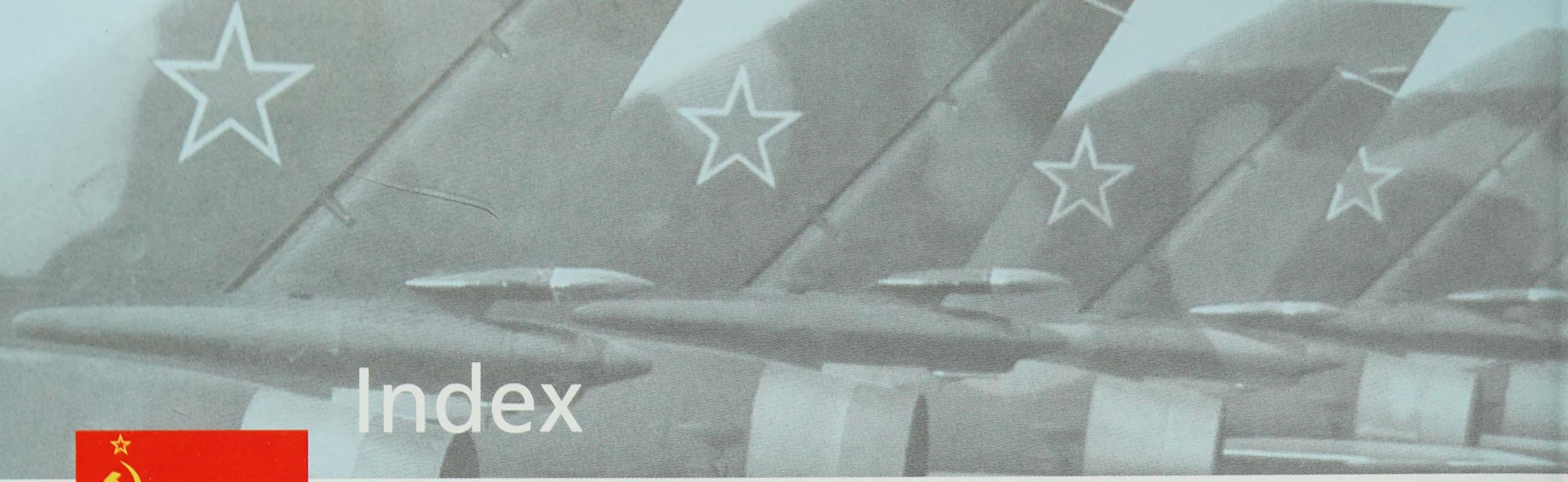
A Su-24M makes a spectacular banked turn.

Of course, the NATO could not and would not put up with the Warsaw Pact's considerable superiority in ground forces. This, together with the political changes in the Soviet Union and the warming of relations with the western world, eventually led to the signing of the Conventional Forces in Europe (CFE) treaty envisaging major arms reductions. The CFE treaty affected the Tactical Aviation as well; the break-up of the Soviet Union in 1991 dealt a further blow, as many FA units found themselves outside Russia. But that, again, is another story – and possibly the subject of another book.

A Su-24M is about to receive a fuel top-up from a sister ship carrying a UPAZ-1 'buddy' refuelling pod.



In-flight refuelling is done in low-speed configuration, and the landing lights are used at dusk to illuminate the tanker.



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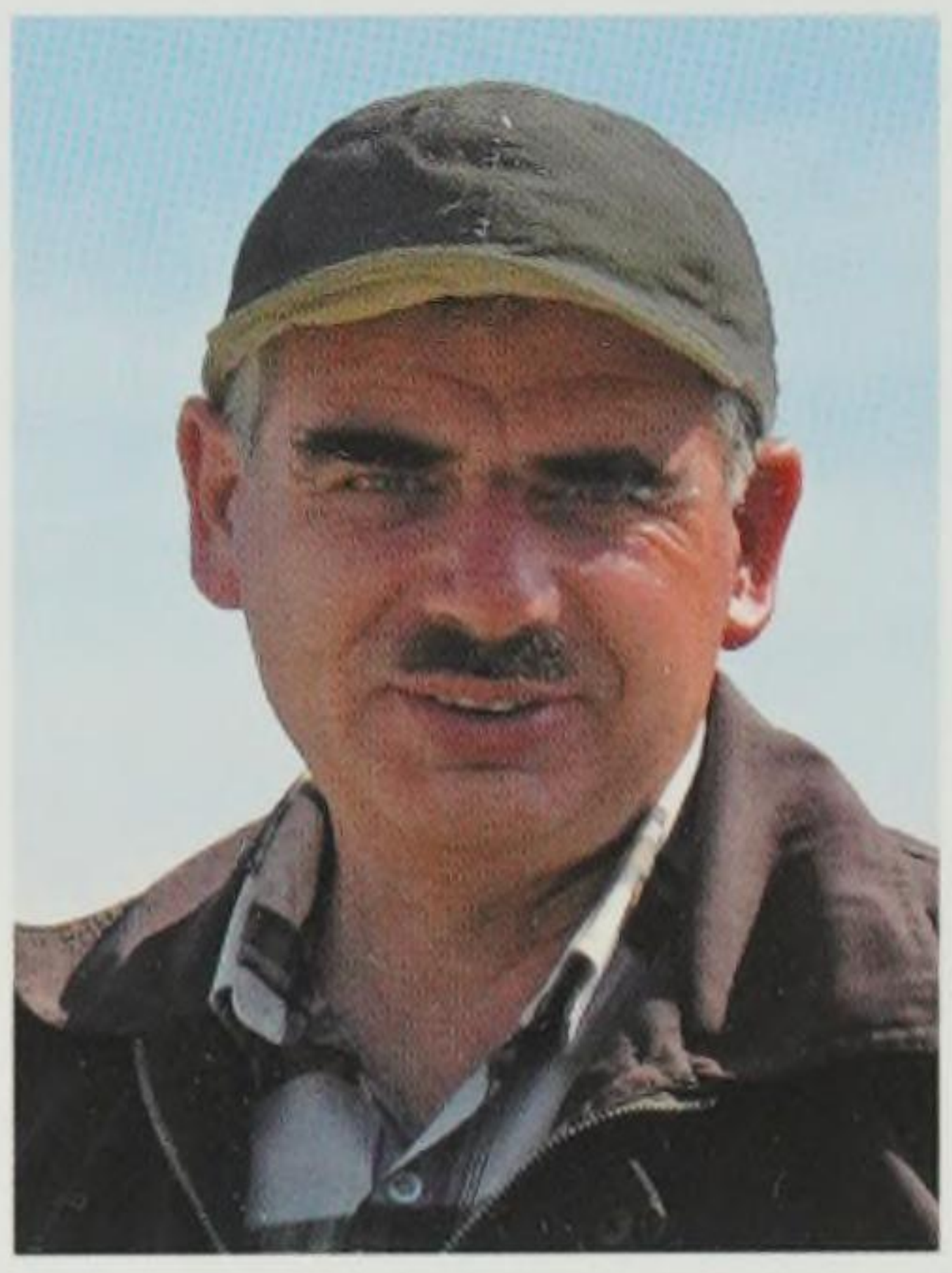

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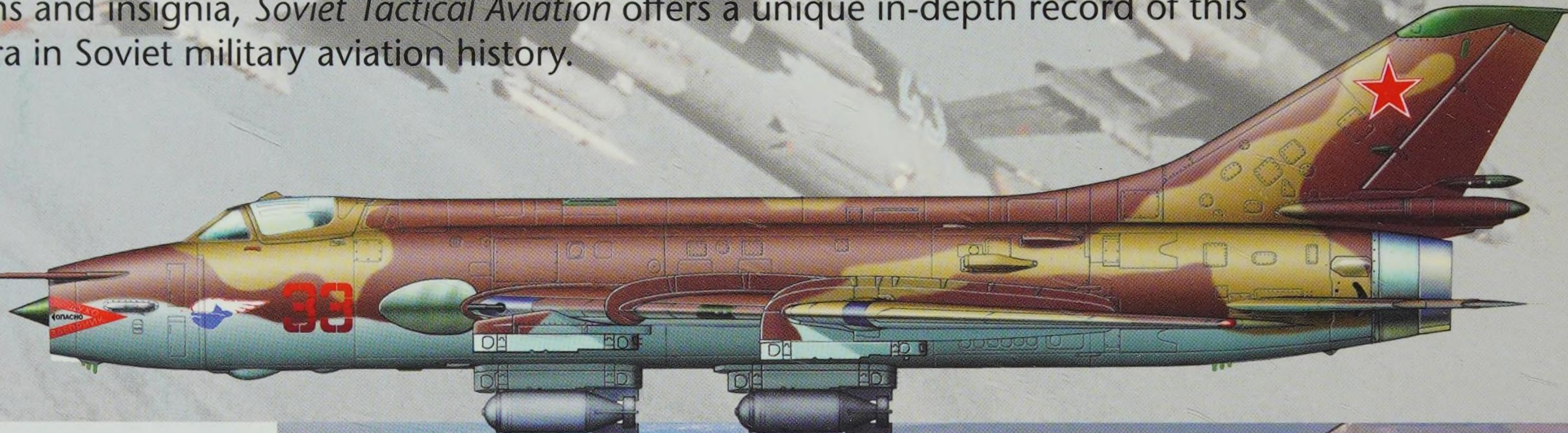

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